A CLINICAL STUDY ON

AKKARA MANTHAM

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INTRODUCTION

SIDDHA, a medical science is very ancient in origin, as old as the ancient civilization.

"கல்தோன்றி மண் தோன்றாக் காலத்தே
வாலொடு முன்தோன்றிய மூத்தகுடி"

Siddha system is based on the "THIRIDHOSHA" humoral theory, akin to modern endocrinology. The siddha system in tamil got developed in the south India.This system was traditionally believed to have originated from the creator, the fountain head of mercy, with his threefold function of creation, preservation of good and destruction of evil.This goes very well with what is expressed in the word,"The physician treats, the god cures".

"வாதமாய்ப் படைத்துப் பித்த வன்னியாய்க் காத்துச் சேட்ப
சீதமாய் துடைத்துப் பாரோர் தேகத்திற்குடியா மைந்து"

- தேரையர் மருத்துவப் பாரதம்

The goal in human life is to get permanent bliss.This is achieved when one is able to get oneself out of the bondage of physical and mental limitations.The persons who have attained such a stage are called "SIDDHARS". Philosophically "CIT" means " infinite knowledge", persons who have attained knowledge or realisation of infinite are called "SIDDHARS".

Thirumoolar's tantra reveals the truth of nature.Things that are not seen are powerful than things which are visible.Earth is strong but water is stronger, fire is powerful than water, air is more powerful than fire, sky is most powerful than the others.Thus our body is powerful but our mind is still more powerful and our soul is most powerful.Atom is powerful but god is powerful than atom.

Human body is produced from nature. Man is unconscious of his being as one with nature. It is the nature that causes disease and it is the nature that effects their cures.Siddha system describes that the force in the microcosm or the man, are identical with the force in the macrocosm or the world.

The external air corresponds to the internal vatham, the external heat corresponds to the internal pitham, and the external water corresponds to the internal kapham.

In scientific parlance, vatham comprehends all the phenomena which comes under the function of central and sympathetic nervous system; pitham, the function of thermogenesis or heat production, metabolism within its limit, the process of digestion, colouration of blood, excretion and secretion etc, and kapham, the regulation of heat and formation of the various preservative glands.

Human body is composed of ninety six tatwas.The derangement of the three humours become liable to 4448 diseases.

Balavagadam is a branch of medical science which deals with the disease of children, their essential nature, especially on the functional changes together with planetary influences, morbid diathesis etc, and their treatment.

Child care being different in many aspect from adult care, it is considered as a separate branch of medicine. Balavagadam deals with the diseases of the children up to the age of 12 years.The life time of the child is divided into various stages or paruvangal.They are Kaapu (0 - 6 months), Senkeerai (6 - 12 months), Thaalattu (1 - 1½ yrs), Sappaani (1½ - 2 yrs), Mutham (2 - 2½ yrs), Varugai (2½ - 3 yrs), Ambuli (3 - 3½ yrs), Chitrill (3½ - 4 yrs), Siruparai (4 - 4½ yrs), Siruthervidu thal (4½ - 5 yrs) paruvangal.For female children they can be further divided into Ammaanai, Neeraduthal, Oonjal, Paethai (5 - 6 yrs) and Pedumbai (6 - 12 yrs) paruvangal.

The disease that occur in children can be divided into two, they are Karuvil thondrum noigal, (ie) disease that occur during intrauterine period and Purakaarana noigal, (ie) disease that occurs after the birth of the child due to extrinsic causes.

Mantham is one of the disease which comes under karuvil thondrum noigal. “AKKARA MANTHAM” is a common disease in children.The clinical symptoms of “AKKARA MANTHAM” more or less correlates with the clinical symptoms of “MALNUTRITION”.So the author has selected the

topic “AKKARA MANTHAM” for the present study with the trial medicine “OMATHY URUNDAI”.

“Medicine means the prevention of bodily illness

Medicine means the prevention of mental illness

Medicine’s purpose is to avert disease

Medicine therefore is the prevention of death”

AIM AND OBJECTIVES

Children are the future citizens of a nation and as such their health is of paramount important.

Aim:

According to the world health organization more than 30% of the world infant population is malnourished.As the population of our country is increasing, this implies that there is an increase in risk for the health and nutrition of this population, due to the appearance of pathologies peculiar to urban life, an increase in the cost of basic necessities and a decrease in survival strategies.Malnutrition is generally a major contributor to morbidity in these pockets of poverty.

Objectives:

- To review the ideas and literary evidences regarding the disease "AKKARA MANTHAM" in siddha literatures.
- To evaluate the disease AKKARA MANTHAM clinically by examination of Etiology, Clinical features, Treatment, Prognosis etc.
- To know the alteration of the disease under the topics Mukkutram, Udal kattukal, Poripulangalaal arithal, Envagai thervugal, Neerkuri, Neikuri etc.

- To study the extent of correlation of AKKARA MANTHAM as explained in the siddha literatures with malnutrition in modern literatures.
- To have an idea about the prevalence of malnutrition with Reference to age, Sex, Socio economic status, Land, Seasonal variation etc.
- To identify malnutrition by the "Markers of Malnutrition" like Birth weight, Maternal age, Weight, Height, Body mass index, Number of pregnancies, Father's employment etc.
- To have the clinical trial in AKKARA MANTHAM with the trial medicine viz, OMATHY URUNDAI, 1 pill (100mgm) three times a day with hot water before meals.
- To have an clearcut idea about the Identification of raw drugs, Purification and their Chemical constituents.
- To make use of modern parameters in the investigation to confirm the diagnosis and prognosis of the patient.
- To analyse the Biochemical substances and Pharmacological actions of the trial drug.
- To make an awareness among the parents about the prevention of the disease.

REVIEW OF LITERATURE

SIDDHA ASPECT

அக்கரமாந்தம்

இயல்: (Definition)

மந்தம் என்பது உருவ நிலையில் உடல் நிலையில் மந்தம், அருவ நிலையில் அகக்கருவியாகிய மனம், புத்தி, அகங்காரம், சித்தத்திலும் மந்தம் என்றும், உயர் நிலையிலும் மந்தம் என்றும் விரித்து கொள்ளலாம்.

"மந்த இயல்புடையது மாந்தம்"

நோய் வரும் பருவங்கள்: (Age of onset)

இந்நோய் தாலப்பருவம் (1-1½வயது) சப்பாணிப்பருவம் (1½-2 வயது), முத்தப்பருவம் (2-2½வயது), வருகைப்பருவங்களில் (2½-3வயது) உண்டாகக்கூடிய நோயாகும்.

நோய் எண்: (Classification)

மாந்தம் 31,21,8 - (பாலவாகடம்)

மாந்தம் 8- (பதினெண் சித்தர்கள் வைத்திய சில்லறைக் கோவை - முதல் பாகம்)

நோய் வரும் வழி (Aetiology)

குழந்தை பிறந்த பின்பு தாயிடத்தில் உற்பத்தியாகும் பாலை உண்டே அது வளருகின்றது. அதனால் குழந்தை பெற்ற தாய் உண்ணும் உணவின் சக்தியைப் பொறுத்தே தாய்ப்பாலின் தன்மையும் இருக்கும்.

குழந்தை வளர்ச்சிக்கு இடையூறு செய்யக்கூடிய சில பொருள்களைத் தாய் விலக்க வேண்டும். இவ்விதம் விலக்காமல் தன் உணவாகச் சேர்த்து உண்டால் அதிலிருந்து கிடைக்கக்கூடிய ஊட்டச் சத்தானது முக்குற்ற குறை நிறை நிலையில் குழந்தையினுடைய உடல் நிலையைப் பாதிக்கும். அதனால் குழந்தைக்கு மாந்தம் ஏற்படுகிறது.

குழந்தை பிறந்த ஒரு ஆண்டிற்குள் நீர் நிலைகளில் பழுத்து உதிர்ந்த சருகுகள் விழுந்து அழுகியிருக்கும் நீரைக் குடித்தாலும், எருமைப்பால், புளித்த எருமை மோர், எருமை நெய், வாழைப்பழம், மாம்பழம், தேங்காய், இளநீர், கடலை, வெல்லம், காட்டுத்துவரை, மொச்சைக்கொட்டை, புளியங்கொட்டை, பருப்புருண்டை, மாவினால் செய்யப்பட்ட பொருட்கள், அதிரசம், வாயு பொருட்கள், சோறு இவைகளை அதிகமாக உண்பதாலும், பாகற்காய், கள், ஊன், பெரிய உளுவை மீன், வாளை, பன்றி, வரால் மீன், கெண்டை மீன் இவைகளை உண்பதால் சுரமடித்தல் என்னும் சில பல காரணங்களால் தாய்க்கு மலச்சிக்கல் ஏற்படக்கூடும். அதன் காரணமாக அவளது உடல் கனத்துத் துன்பப்படும் போது குழந்தையானது அத்தாயினிடம் பால் குடித்தால் மயிர்க்கூச்சுடன் கூடிய காய்ச்சல் உண்டாகும். அத்துடன் மிக்க கழிச்சலும் ஏற்பட்டு மாந்த நோய் உண்டாகும்.

பொது குறிகுணங்கள்: (General Signs and symptoms)

- குழந்தையினுடைய உடல் கனத்திருக்கும்
- நோதல் உண்டாகும், மிகுதியான வியர்வை உண்டாகும்
- குழந்தை சுறுசுறுப்பில்லாமல் சோர்ந்து இருக்கும்
- விடாத சுரமிருக்கும், உடம்பிலிருந்து ஒருவித வெப்பு நாற்றம் வீசும்
- மயக்கம் உண்டாகும்
- கண்விழி சிவந்திருப்பதோடு விழிகள் நிலையாக இல்லாமல் சுழன்று கொண்டேயிருக்கும்
- கண்ணில் குழி விழுந்து காணப்படும்
- முகம் வெளுத்து ஒருவகை மங்கிய ஒளி காணும்
- குரல் தாழ்ந்து காணப்படும், வாய் உலரும்
- தாயினிடம் பால் உண்ணாது
- அடிக்கடி வாந்தியாகும், பசி ஏற்படாது
- சீதமும் மலமுமாகவும், கெட்டுபோன பால் போலவும், தண்ணீர் போலவும், பல நிறமாகவும் பேதியாகும்.
- கைகால்கள் பின்னிக்கொள்ளும் (வலிப்பு ஏற்படும்)
- கைகால்கள் சூடு இல்லாமல் குளிர்ந்து போகும்
- குழந்தை கையில் தங்காமல் அழுது கொண்டேயிருக்கும்

முக்குற்ற வேறுபாடுகள்: (Alteration of mukkutram)

உணவு வேற்றுமை

↓

முக்குற்றம் மாறுபடுதல்

↓

வயிற்றில் ஐய அடை மிகுதி

↓

வாயு கேடடையும் (மந்தமலாது வாயு வராது)

மேல்நோக்குகால் பாதிப்பு - வாந்தி

கீழ்நோக்குகால் பாதிப்பு - கழிச்சல்

சமானவாயு பாதிப்பு - உணவு செரியாமை

↓

தீக்குற்றம் பாதிப்பு (அனலகம்., இரஞ்சகம்)

↓

உண்ட உணவு புளித்தேனும், நஞ்சாகியேனும்

வயிற்றில் தங்கி வலி உண்டாக்கும்.

(நெடுவாத சார்வதுவுமன்றி சூலை வராது)

↓

செரியாத உணவு பக்குவாசயம் செல்லும்

↓

பக்குவாசயத்தில் ரசம் உறிஞ்சப்படாமல் பொதுவாக ரசம் செல்லும் துளைகள் அடைத்து, மயிராக்கால் கண்ணையும் மறைக்கும்

↓

சுரம்

(குடற்தன்னில் சீதமலாது சுரம் வராது)

(அசீரணமன்றி சுரம் வராது)

↓

மாந்தம்

அக்கரமாந்த குறிகுணங்கள்:

(Signs & symptoms of AKKARA MANTHAM)

"நாடுமே அத்தியில் சூடு கொண்டு
நல்லுடம்பு குளிர்ந்துசுரங் காயும் ஓயும்
ஓடியதோர் சுவாசத்தில் அனல்பு டைக்கும்
உதடுகளும் வெடித்துவாய்ப் புண்ணும் நெஞ்சு
தேடி அன்னை அழுமப்பால் துயர மொத்தத்
தேம்பிவாய் திறப்பதற்கு அருமை யாகி
வாடுமே சிறுவனுக்குத் தேக மெல்லாம்
வழும்புடனே பேதியக்ர மாந்த மென்னே"

- பாலவாகடம் (பக்கம்-122)

குழந்தைகட்கு

- அத்தியில் சூடு உண்டாகும்
- உடம்பு குளிரும்,சுரம் இருக்கும்
- உடம்பு ஓய்ச்சலாக இருக்கும்
- மூச்சில் அனல் வீசும்
- உதடுகள் வெடித்து, வாயில் புண் உண்டாகும்
- நெஞ்சு உலரும்
- குழந்தை அன்னையைத் தேடியழும்
- வாய் திறக்க வொட்டாது
- குழகுழவென்று கழிச்சலாகும்

எண்வகைத் தேர்வு (அ) பிணியறி முறைமை (Eight tools of diagnosis)

பிணியறி முறைமை என்பது உடலைப் பிணித்தலாய நோயைத் தெரிந்துகொள்ளுகிற ஒழுக்கம்.

இது

- பொறியாற்றேர்தல்
- புலனாலறிதல்
- வினாதல்

பொறி

- மெய்
- வாய்
- கண்
- மூக்கு
- செவி

மருத்துவன் தன் பொறிகளால் நோயாளியின் பொறிகளை அறிதல்.

புலன்

- நாற்றம்
- சுவை
- ஒளி
- ஊறு
- ஓசை

வினாதல்

நோயாளியின் குடும்ப வரலாறு, வயது, உடல்வன்மை, மன உறுதி, பண்பு, செரிப்புத்தன்மை, இயற்கை, உணவு, வாழுமிடம், அவ்விடத்தின் தன்மை, நோயின் வயது, நோய் தோன்றிய காலம், இடம், நோய் உண்டாவதற்கு முன்பு நோயாளியின் நிலைமை ஆகியற்றை கேட்டுத் தெரிந்து கொள்ளுதல்.

எண்வகைத் தேர்வுகளாவன

"நாடிப்பரிசம் நாநிறம் மொழிவிழி
மலம் மூத்திரமிவை மருத்துவராயுதம்"

- (நோய்நாடல் நோய் முதல் நாடல் முதல் பாகம் பக்கம்-253)

"மெய்க்குறி நிறந்தொனி விழிநாவிருமலம் கைக்குறி"

- தேரையர் வாக்கு

"தரணியுள்ள வியாதி தன்னை யட்டாங்கத்தால்
தானறிய வேண்டவது யேதோ வென்னில்
திரணியதோர் நாடி கண்கள் சத்தத்தோடு
தேகத்தினது பரிசம் வருணம் நாக்கு
யிரணமல மூத்திரமாமிவைக ளெட்டும்
யிதம்படவேதான் பார்த்துக் குறிப்புங் கண்டு
பரணருளால் பெரியோர்கள் பாதம் போற்றிப்
பண்பு தவறாமல் பண்டிதஞ் செய்வீரே"

- (நோய்நாடல் நோய் முதல் நாடல் முதல் பாகம் பக்கம் -129)

நாடி

தேகத்தினிடத்தேயுள்ள எல்லா உறுப்புகளிலும் சிறந்தது இருதயம். இதன் மூலமாகத்தான் தாதுக்கள் யாவும் போஷிக்கப்படுகின்றன. இதுவே தேகம் நன்னிலையிலிருப்பதற்கும் சுகமில்லாமைக்கும் காரணம். இதன் தொழில் வேறுபாடுகளை நாடிகள் உணர்த்தும்.

நாடி நடை சரியாகத் தோற்றாத நிலைகள்

"கொண்டிடவே கயரோகி காசரோகி
குறிப்பாகச் சிற்றின்பம் செய்த பேர்கள்
அண்டிடவே தரித்திரர்கள் விருத்தர் பாலர்
அன்பாகத் தண்ணீரில் மூழ்கினோர்கள்

கொண்டிடவே இவர்களது உறுப்பின் தாது

கூறவே முடியாது எவர்க்குக் கிட்டும்

பண்டிடவே யிப்பரீட்சை யார்தான் காண்பார்

பராபரத்தின் மிகிமையிது பாருபாரே”

-(நோய் நாடல் நோய் முதல் நாடல் முதல் பாகம் பக்கம் -162)

மேற்கூறிய செய்யுளில் நாடிநடை பாலர்களுக்கு சரியாக தோற்றாது என்று கூறியபோதும், அக்கரமாந்தத்தில்

- வாத நாடி (வாதமெனும் நாடியது தோன்றில் சீதமந்த……...)
- பித்த வாத நாடி

(சிறப்பான பித்தத்தில் வாதநாடி சேரில்……

செரியாமைக் குன்மஞ் சூலை

யுற்றசுரங்கிராணி வயிற்றிரைச்சல் மந்தம்……)

- வாத பித்த நாடி (பொருளான வாதத்தில் பித்தஞ்சேர்ந்தும் ……

செரியாமை புளித்தேப்பம்……)

போன்ற நாடி நடைகள் காணப்படும்.

ஸ்பரிசம்

அக்கரமாந்தத்தில் ஸ்பரிசித்து பார்த்தால் சுரம் இருப்பின் வெப்பமாக இருக்கும். சுரம் இல்லாவிட்டால் உடல் குளிர்ந்து காணும். தோல் வரண்டு வெடிப்பு காணும். மயிர் உதிர்தல், சிலிர்த்தல், உடல் சுரசுரத்தல், புண், புரை, வீக்கம், தேகம் இளைத்தல், தலை உச்சியில் குழிவிழுந்து காணல் முதலியவை காணப்படும்.

நா

அக்கரமாந்தத்தில் நாவில் புண் (அ) வெடிப்பு காணப்படும். நாவரட்சி, நா சிவந்து (அ) வெளுத்துக் காணல், மாப்படிந்திருத்தல் ஆகியவை காணப்படும்.

நிறம்

அக்கரமாந்தத்தில் தோல் வெளுத்து காணும்.

மொழி

அக்கரமாந்தத்தில் தாழ்ந்த ஒலி இருக்கும்.

விழி

பார்வை பாதிப்படையும், கீழிமை வெளிறிகாணும், கண் பஞ்சடைத்து காணப்படும்.

மலம்

அக்கரமாந்தத்தில் கழிச்சல் காணப்படும்.

மூத்தரம்

அக்கரமாந்தத்தில் சிறுநீர் குறைந்து வெளிப்படும்.

நீர்க்குறி

சிறுநீர் பரிசோதனை

"அருந்துமாறிரதமும் அவிரோதமதாய்
அ.ர்கல் அலர்தல் அகாலவூன் தவிர்ந்தழற்
குற்றளவருந்தி உறங்கி வைகறை
ஆடிக்கலசத் தாவியே காது பெய்
தொருமுகூர்த்தக் கலைக்குட்படு நீரின்
நிறக்குறி நெய்க்குறி நிருமித்தல் கடனே"

(நோய் நாடல் நோய் முதல் நாடல் முதல்
பாகம் பக்கம் -265)

என்பதினால், உண்ணுகின்ற அறுசுவைப் பொருள்களும் ஒன்றுக்கொன்று வேற்றுமையடையாமலும், பசிக்குத் தக்கபடி குறைத்தல், அதிகரித்தல், காலந்தப்புதல் முதலிய குற்றங்களுண்டாகா வண்ணம் புசித்து உறங்கி, விடியற்காலத்தில் படிக பாத்திரத்தில் நீரை ஆவிபோகாதபடி பெய்த 3¾ நாழிகைக்குள் அதன் நிறக் குறியையும், அதில் எண்ணெய்விட்டுப் பார்த்து காணப்படுகின்ற குறியையும் கவனித்து, பிணிகளின் தீரும் தீராத குறிகளை அறியலாம்.

நீரின் பொதுக்குணம்

"வந்த நீர்க்கரிஎடை மணம் நுரை எஞ்சலென்
றைந்தியலுளவவை யறைகுது முறையே"

- (நோய் நாடல் நோய் முதல் நாடல்
முதல் பாகம் பக்கம் -265)

என்பதால், இழிகின்ற நீருக்கு

- நிறம்
- எடை
- நாற்றம்
- நுரை
- குறைதல்

என ஐந்து இயல்கள் உண்டு.

நெய்க்குறி

குழந்தைகளின் நாடிநடை சரியாக கணிப்பதில் சிரமம் உள்ளதால், நெய்க்குறி பரிசோதனை மூலம் நோயாளர் எக்குற்றத்தால் பாதிக்கப்பட்டுள்ளார் என்பதனை கணிக்கலாம்.

"நிறக்குறிக் குரைத்த நிருமாண நீரிற்
சிறக்க வெண்ணெய்யோர் சிறுதுளி நடுவிடுத்
தென்றத் திறந்தொலி யேகாதமைத்ததி
னின்றதிவலை போம் நெறிவிழியறிவும்
சென்றது புகலுஞ் செய்தியை யுணரே"

- (நோய் நாடல் நோய் முதல் நாடல்
முதல் பாகம் பக்கம் -279)

என்பதால், நோயைக் கண்டுபிடித்தற் பொருட்டு, சொல்லியிருக்கின்ற விதி பொருந்திய சிறுநீரில் எண்ணெய் ஒரு துளி சிதறாமல் விட்டு வெய்யிலானது அந்நீரில் படும்படி திறந்து, காற்றானது அதில் வீசி அந்த எண்ணெய்த் துளி ஆடாதபடி வைத்து, அச்சிறுநீரில் விடப்பட்டிருக்கின்ற எண்ணெய்த் துளியானது செல்லுகின்ற வழியால் நோயை அறிந்து கொள்ளலாம்.

"அரவென நீண்டிடின.்.தே வாதம்"
"ஆழி போற்பரவின் அ.்.தே பித்தம்"
"முத்தொத்து நிற்கின் மொழிவதென்கபமே"

- (நோய் நாடல் நோய் முதல் நாடல்
முதல் பாகம் பக்கம் -279)

அக்கரமாந்தத்தில் சிலருக்கு ஆழிபோலவும், சிலருக்கு அரவுபோலவும் பரவியது.

முக்குற்றம் (Thiridhosha)

தசநாடிகள் பத்தில் மூலாதாரமாக நின்றது இடகலை, பிங்கலை, சுழிமுனை என மூன்று நாடிகளாகும். இந்த மூலாதார நாடிகளை முறையே அபானன், பிராணன், சமானன் என்னும் வாயுக்களின் இயக்கத்தால் விடும் சுவாசம் எனலாம்.

இடகலை + அபானன் = வாதம் - 1 மாத்திரை

பிங்கலை + பிராணன் = பித்தம் - 1/2 மாத்திரை

சுழிமுனை + சமானன் = ஐயம் - 1/4 மாத்திரை

வாதம்

வளி ஒன்றாயிருப்பினும் தம் இடம், தொழில் முதலியவற்றால் பத்து வகைப்படும்.

வரிசை எண்	வாதம்	இருப்பிடம்	தொழில்
1.	பிராணன்	தமரகத்தினின்று மூக்கு வரை	மனம், புத்தி, உள்ளம், ஐம்பொறி இவைகளைத் தன்னிலைப்படுத்தி, காறியுமிழ்தல், இருமல், தும்மல், ஏப்பம்விடல், மூச்சுவிடல் வாங்கல் உண்ணும் உணவை உட்செலுத்தல் ஆகியவை.
2.	அபானன்	எருவாயினின்று அடிவயிறு இடுப்பின் பூட்டு, நீர்ப்பை, ஆண்பெண் குறிகள், தொடை	வெண்ணீர், நாதம், மலம், சிறுநீர், கரு இவற்றை வெளிப்படுத்தும்.

3.	சமானன்	பக்குவாசயம் (வயிறு)	சாரத்தையும், திப்பியையும் வெவ்வேறாக பிரித்து, சாரத்தை உடலின் எல்லா பாகங்களுக்கு பகிர்ந்து கொடுக்கும்.
4.	வியானன்	தமரகம்	நடத்தல், உடல் உறுப்புகளை அசைத்தல், கண் இமைத்தல், விழித்தல்.
5.	உதானன்	மார்பு	பேச்சுக்கு முதற்காரணமாய் இருந்து, முயற்சி, மனதிடம், உடல்வன்மை, உடல்நிறம், உடல்ஒளி, நினைவு ஆகியவை.
6.	நாகன்	கண்	கண்களைத் திறக்கவும், இமைக்கவும் செய்யும், மயிர்களை சிலிர்க்கச் செய்யும்.
7.	கூர்மன்	மனதிலிருந்து கண்வரை	இமையை கொட்டுவிக்கும், கொட்டாவி விடப்பண்ணும், வாயை மூடப் பண்ணும்.
8.	கிருகரன்	நாக்கு	நாவிற் கசிவையும், நாசியிற் கசிவையும் உண்டாக்கும், மிகுந்த பசியையுண்டாகச் செய்யும், ஒன்றை நினைத்திருக்க செய்யும், தும்மல், இருமல் உண்டாக்கும்.

9.	தேவதத்தன்	குதம்,குய்யம்	சோம்பல், உடல் முரித்தல் உண்டாக்கும். தாங்குதல், சண்டை கொள்ளல், தர்க்கம் பேசல், மிகுந்த கோபம் உண்டாக்கும்.
10.	தனஞ்செயன்	மூக்கு	இறந்தால் காற்று வெளிப்பட்ட பின்பு மூன்று நாளில் தலை வெடித்துபின் போகும்.

அக்கரமாந்தத்தில் பாதிக்கப்படும் வாயுக்கள்

அபானன் - கழிச்சல் காணப்படும்

சமானன் - பசியின்மை காணப்படும்

உதானன் - குமட்டல், வாந்தி காணப்படும்

வியானன் - உடல் மெலிந்து காணும்

கிருகரன் - பசியின்மை காணப்படும்

பித்தம்

பித்தம் தன் இடம், தொழில் வேற்றுமையால் ஐவகைப்படும்.

அவை

- ❖ பாசகம் (அனற்பித்தம்)
- ❖ இரஞ்சகம்
- ❖ சாதகம்
- ❖ ஆலோசகம்
- ❖ பிராசகம்.

வரிசை எண்	பித்தம்	இருப்பிடம்	தொழில்
1.	பாசகம்	இரைப்பைக்கும் பக்குவாசயத்திற்கும் இடையில்	நீர்வடிவமுள்ள பொருள்களை வறளச் செய்து, உண்ட உணவுப் பொருள்களை செரிக்க பண்ணும்
2.	இரஞ்சகம்	இரைக்குடல்	உணவிலிருந்து பிரிந்துண்டான சாற்றுக்குச் செந்நிறத்தைத் தருகிறது.
3.	சாதகம்	தமரகம்	மனம், புத்தி, பற்று இவற்றைக் கொண்டு விருப்பமான தொழிலை செய்யும்.
4.	ஆலோசகம்	கண்	எல்லாப்பொருள்களின் வடிவத்தையும் அறிதலாகிய காரியத்தைச் செய்யும்.
5.	பிராசகம்	தோல்	தோலுக்கு ஒளியைக் கொடுக்கும்.

அக்கரமாந்தத்தில் பாதிக்கப்படும் பித்தம்

பாசகம் - உணவு செரியாமை காணப்படும்

இரஞ்சகம் - செந்நீரின் செந்நிறம் குறைந்து காணப்படும்

ஆலோசகம் - கண் பார்வை குறைந்து காணப்படும்

பிராசகம் - தோல் வறட்சி, சுரசுரப்பு காணப்படும்

ஐயம்

ஐயம் ஐவகைப்படும்

அவை

- ❖ அவலம்பகம்
- ❖ கிலேதம்
- ❖ போதகம்
- ❖ தற்பகம்
- ❖ சந்திகம்

வரிசை எண்	ஐயம்	இருப்பிடம்	தொழில்
1.	அவலம்பகம்	நுரையீரல்	மற்ற நான்கு ஐயங்களுக்கும் பற்றுக்கோடாயிருக்கும்.
2.	கிலேதம்	இரைப்பை	உண்ணப்பட்ட உணவுப் பொருள், நீர் முதலியவைகளை ஈரப்படுத்தி மெத்தென செய்யும்.
3.	போதகம்	நாக்கு	உணவின் சுவையை அறிவிக்கும்.
4.	தற்பகம்	தலை	கண்ணுக்கு குளிர்ச்சி தரும்.
5.	சந்திகம்	கீல்கள்	கீல்களை ஒன்றோடொன்று பொருத்தித் தளரச் செய்யும்.

அக்கரமாந்தத்தில் பாதிக்கப்படும் ஐயம்

கிலேதம் - உணவு செரியாமை காணப்படும்

போதகம் - நாச்சுவையறியாமை காணப்படும்

பருவகாலங்கள் (Season)

பூமி ஞாயிற்றைச் சுற்றி வருவதற்கு ஓர் ஆண்டு ஆகின்றது. இது பெரும் பொழுதாம். இது ஆறு பகுதிகளைப் பெற்றுள்ளது. அவை,

கார் காலம்	-	ஆவணி, புரட்டாசி (August, september)
கூதிர் காலம்	-	ஐப்பசி, கார்த்திகை (October, November)
முன்பனி காலம்	-	மார்கழி, தை (December, January)
பின்பனி காலம்	-	மாசி, பங்குனி (February, March)
இளவேனிற் காலம்	-	சித்திரை, வைகாசி (April, may)
முதுவேனிற் காலம்	-	ஆனி, ஆடி (June, July)

நிலம் (Land)

மக்களின் தன்மை அவர்கள் வசிக்கும் நிலத்தை பொருத்தே அமையும். யாவற்றிற்கும் நிலமே ஆதாரமாக இருக்கிறது.

நிலம் ஐந்து வகைப்படும். அவை,

குறிஞ்சி	-	மலையும், மலை சார்ந்த இடமும்
முல்லை	-	காடும், காடு சார்ந்த இடமும்
மருதம்	-	வயலும், வயல் சார்ந்த இடமும்
நெய்தல்	-	கடலும், கடல் சார்ந்த இடமும்
பாலை	-	பாலைவனமும், அதை சார்ந்த இடமும்

உடற்றாதுக்கள்

உடற்றாதுக்கள் ஏழு வகைப்படும். அவை,

வரிசை எண்	உடற்றாதுக்கள்	தொழில்
1.	சாரம்	உடலையும், மனதையும் ஊக்கமுறச் செய்யும்.
2.	செந்நீர்	அறிவு, வன்மை, ஒளி, செருக்கு, ஒலி இவைகளை நிலைக்கச் செய்யும்.
3.	ஊன்	உடலின் உருவத்தை அதன் தொழிற்கிணங்க அமைத்து என்பை வளர்க்கும்.
4.	கொழுப்பு	கடினமின்றி இயங்க நெய்ப்புப்பசை ஊட்டும்.
5.	என்பு	உடலை ஒழுங்குபட நிறுத்தி வைக்கும்.
6.	மூளை	என்புக்குள் நிறைந்து அவைகளுக்கு வன்மை, மென்மை தரும்.
7.	வெண்ணீர்	தன்னையொத்த உருவப் பெருக்கிற்கு இடமாகிய கருத்தோற்றத்திற்கு முதலாய் நிற்பது.

அக்கரமாந்தத்தில் பாதிக்கப்படும் உடல்தாதுக்கள்

சாரம் - உடலும், மனமும் ஊக்கமின்மை

செந்நீர் - சுறுசுறுப்பின்மை, உடல் வெளிறல் காணும்

ஊன் - உடல் மெலிந்து காணும்

கொழுப்பு - உடல் மெலிந்து காணும்

தீரும் தீரா நிலை (Prognosis)

மாந்த நோயில் சுரமும், சுரத்தில் விட தோடம், வீக்கம், வயிறு பொருமல், கபம், இளைப்பு, சுவாசம், விக்கலாகிய இவை ஒன்றன்பின் ஒன்றாய்த் தொடருமாயின் நோயாளி சாவான் என்பது திண்ணம்

"கருதுகின்ற மந்தமதில் சுரமுமாகா
கலந்த சுரந்தனில் விஷமே காணலாகா
மருவுகின்ற விஷமதிலே வீக்கமாகா
வரும் வீக்கந்தனிலே வயிற்றுப் பொருமலாகா
பொருமலிலே கபரோகம் புரளலாகா
பொருந்து கபந்தனிலிளைப்புப் பூணலாகா
வெருவிய தோரிளைப்பதிலே சுவாசம் விக்கல்
மேலிடுகில் மரணமென்றே விள்ளலாமே"

- (நோய் நாடல் நோய் முதல் நாடல் முதல் பாகம் பக்கம் -207)

மருத்துவம் (Treatment)

"மூன்றிலொன்று யர்ந்ததை முன்னரறிந்து
முந்தியதனை யொழித்திடு மருந்திடு
தணியும் நோயின் தந்திரமதுவே
பேணிக் கணித்திடின் பிறவாய் பின் குணம்"

- (நோய் நாடல் நோய் முதல் நாடல் முதல் பாகம் பக்கம் -132)

என்பதனால், முதலில் கேடடைந்த முத்தோடங்களையும் தன்னிலைப்படுத்த வேண்டும்.

மருத்துவ வழிமுறை (Line of treatment)

- ❖ கேடடைந்த உயிர்த்தாதுக்களை தன்னிலைப்படுத்தும் மருந்துகளை வழங்க வேண்டும்.
- ❖ உணவை செரிக்கச் செய்வதற்கான மருந்துகள் வழங்க வேண்டும்.
- ❖ வயிற்று வலிக்கான மேல்பூச்சு மருந்துகள் வழங்கலாம்.
- ❖ கழிச்சல் காணின் அதற்கான மருந்துகள் வழங்க வேண்டும்.
- ❖ இந்நோய்க்கு சிறப்பாக "ஓமாதியுருண்டை" கொடுக்கலாம்.

  இதனால் கேடடைந்த உயிர்த்தாதுக்கள், உடல்தாதுக்கள் தன்னிலைப்படும். உணவை எளிதில் செரிக்க செய்கின்றது.

  இம்மருந்தை ஒரு மாத்திரை விகிதம் (100 மி.கி) 3 வேளை வெந்நீரில் உணவிற்கு முன்பு வழங்க வேணடும்.

உணவு (Diet)

"மாறுபாடில்லா உண்டி மறுத்துண்ணின்
ஊறுபா டில்லையு யிர்க்கு"

- திருக்குறள்

- ❖ தாய்ப்பாலே குழந்தையின் முக்கியமான உணவு.எனவே குழந்தை பெற்ற தாய்மார்களுக்கு தாய்ப்பாலின் முக்கியத்துவத்தை வலியுறுத்த வேண்டும்.
- ❖ சமச்சீரான உணவு உட்கொள்ள வேண்டும்.
- ❖ செந்நீரை பெருக்கும் உணவுகளை அதிகமாக உட்கொள்ள வேண்டும்.
- ❖ கழிச்சல் இருப்பின் நீர் ஆகாரங்கள் வழங்க வேண்டும்.

பத்தியம்:

"அபத்தியமின்றித் தோடவிகாரமு - மணுகாது
அபத்தியமின்றி ஔடதினீனமு - மணுகாது....."

- தேரையர்

மந்தத்தை உண்டாக்கக் கூடிய பொருட்களான எருமைப்பால், எருமைமோர், எருமை நெய், வாழைப்பழம், மாம்பழம், தேங்காய், இளநீர், கடலை, வெல்லம், காட்டுத்துவரை, மொச்சைக்கொட்டை, புளியங்கொட்டை, பருப்புருண்டை, மாவினால் செய்யப்பட்ட பொருட்கள், அதிரசம், வாயு பொருட்கள், சோறு இவைகளை அதிகமாக உண்ணக் கூடாது.

பாகற்காய், கள், ஊன், பெரிய உளுவை மீன், வாளை, பன்றி, வரால் மீன், கெண்டை மீன் இவற்றை நீக்க வேண்டும்.

நோய் தடுப்பு முறை: (Prevention)

- ❖ வாழுமிடம் சுத்தமாக இருக்க வேண்டும்.
- ❖ நோய் தடுப்பூசிகளை குறிப்பிட்ட காலங்களில் போடவேண்டும்.

REVIEW OF LITERATURE

MODERN ASPECT

MALNUTRITION

Nutrition is the most important determinant of health.This is amply illustrated by the saying “Man is what he eats”.

Food is a major concern of the mankind beginning from the time of conception and extending through the entire life span of the individual .Food supplies the energy for physical activity and other metabolic needs of the body.Nutrients are necessary for maintaining growth of the individual and for repair of the worn out and ageing tissues.Basic constituents for synthesis of digestive juices, enzymes and hormones are derived from food.

Carbohydrates, fats and proteins are the chief energy yielding nutrients and are aptly labelled as macronutrients.Minerals and vitamins are non energy yielding nutrients but most essential for cell function .Because of their requirement in small quantities they are known as micronutrients.

Macronutrients

- Carbohydrate
- Protein and
- Fat.

Carbohydrates

Carbohydrates provide energy, contribute to taste and texture of foods, preserve foods and are essential for digestion and assimilation of other foods.They also protect the protein from being used for energy.Monosaccharides and disaccharides are known as simple carbohydrates, while polysaccharides are referred to as complex carbohydrates.

Body converts all carbohydrates (except those from fiber) to glucose.Glucose is used as a fuel by brain and muscle tissue.It is also converted to glycogen and stored by liver and muscles in the body.Excessive carbohydrates are converted to fat.

Carbohydrate should contribute to 55-60 percent of total food intake. Lack of carbohydrates may produce ketosis, loss of energy, depression and breakdown of body protein.

Fiber

Fiber, a constituent of plant cell wall was considered as an inert component of carbohydrate.It is necessary for normal functioning of alimentary system.Fibers are not digested by the enzymes in gastro intestinal tract.Thus they contribute to the bulk and very little to the energy of food.

Fibers are considered important because of their water-holding capacity, bile acid binding capacity and for the growth of normal microflora of the intestines.High fiber intake decreases the bioavailability of minerals and can lead to flatulence and decreased appetite.

Proteins

Protein is the second most abundant substance in the body next to water.These are made up of 20 different aminoacids .A few aminoacids can be adequately synthesized in the body (non-essential aminoacids), while others must be supplied in the diet (essential aminoacids).Histidine and Arginine are essential during infancy because the rate of their synthesis is inadequate for sustaining growth.

Functions of Proteins

- Proteins help the child to grow by synthesis of tissue in the body.
- Proteins are essential for the formation of Digestive juices, Hormones, Plasma proteins, Enzymes, Vitamins and Haemoglobin etc.
- Proteins also act as a powerful buffers to maintain acid-base equilibrium in the body.
- It is also a source of energy for the body.

Excessive protein is converted by the liver into fat and stored in body tissues.

Protein Energy Malnutrition

There are 2 types

- Marasmus
- Kwashiorkor

Kwashiorkor

It is almost a pure form of protein malnutrition occuring in the second year of life in a child weaned from breast feeding on to a starchy diet with low protein.

Secondary infection like Malaria, AGE, Measles further precipitate protein malnutrition.

Clinical features of deficiency

- The child is apathetic, irritable and drowsy.
- Fairly intact subcutaneous fat and pitting odema.
- The child is stunted and puberty is delayed.

Skin changes

- Maximal around napkin area.
- Symmetrical, pigmented and thickened flaky paint mosaic like appearance with fissuring (crazy pavement appearance).

Hair changes

The hair becomes thin, sparse, brownish and lustless.They may fall off and easily be pulled.Partial correction leads to alternate bands of pigmentation and depigmentation of hair.

Systemic disorders

Gastro intestinal tract

Atropy of intestinal villi, reduced quality and quantity of gastric, pancreatic and bile secretion leading to malabsorption.

Cardio vascular system

Atropy and patchy necrosis, reduced myocardial mass and involvement of conduction system.

Small heart with reduction in stroke volume and cardiac output.

Respiratory system

Atropy of inter costal muscles and other muscles of respiration.

Endocrine system

Insulin, triiodo thyronine and thyroxine level are decreased.The level of growth hormone and cortisol are increased.

Immunological

T and B lymphocyte function impaired.

Total lymphocyte count is decreased.

Wound healing is delayed.

Fats

Fats are a concentrated source of energy and provide insulation to the body.Lipids include triglycerides, phospholipids and sterols.

Fatty acids are the constituent of triglycerides. They are classified into,

- Saturated fatty acids (Palmitic and Stearic acids)
- Unsaturated Fatty acids (Oleic, Linoleic, Linolenic and Arachidonic acids)

EPA and DHA lower blood cholesterol and triglyceride content.

Eicosanoids play an important role in regulation of Lipid concentration, Blood pressure, Immune response and Inflammatory response to injury and infection.

Lipids in circulation are bound with proteins, this complex is called lipoproteins.They are HDL, LDL and VLDL.

Micronutrients

Micronutrients are nutrients needed in tiny amount, may be a few milligram or microgram per day.They do not contribute to the energy intake but normal healthy living is not possible without them.

Micronutrients are

- Vitamins
- Minerals and
- Trace elements.

Vitamins

Vitamins are organic compounds.Vitamins are essential for life.They are necessary for Energy production, Haemopoiesis, Reproduction, Neurological function, Hydroxylation and Synthesis of fatty acids, Nucleic acids and Nucleo proteins.

The fetus and infants get adequate vitamins from the mother during pregnancy and lactation.Dietary intake of vitamins may be low or marginal during infancy and early childhood.

Vitamins are broadly classified into two broad groups, viz. fat soluble vitamins(A, D, E and K) and water soluble vitamins (B and C).

Vitamin A (Retinol)

Vitamin A is found in food of animal origin and the pro-vitamin beta-carotene is present in plant tissues.It is necessary for clear vision in dim light and maintains the integrity of epithelial tissues.

Sources

Liver, Egg, Chicken, Butter, Cereals, Green leafy vegetable, Carrot, Yellow pumpkin, Papaya, Tomatoes and Fish liver oil.

Daily requirement

Infant : 300 - 400 µg

Children : 400 - 600 µg

Clinical features of deficiency

- Night blindness
- Xerophthalmia - dry thickened, pigmented bulbar conjunctiva with oval or triangular glistering white spot - Bitot's spot.

Cornea becomes cloudy, soft (keratomalacia) and undergoes ulceration and necrosis.It leads to perforation, prolapse of the iris, endophthalmitis and ultimately blindness.

Vitamin D

Vitamin D is essential for metabolism of calcium and phosphorus, and for the formation of bone.It enhances the absorption of above mineral from the gut, their mobilization from bones and reabsorption from kidney.

There are 2 forms of vitamin D

Vitamin D_2 (Calciferol or Ergocalciferol)

Vitamin D_3 (Cholecalciferol)

Sources

Fish liver oil, Egg, Liver, Milk, Cheese and Butter.

Dietary supplement is not required when adequately exposed to sunlight.

Daily requirement

Infant : 5 µg

Children : 10 µg

Clinical features of deficiency

Ricket

Age incidence : 1-2 yrs

Delayed milestones except speech, irritability and prominent abdomen.

Skeletal manifestations

- In less than 1 yrs : craniotabes - abnormal softening of skull in occipital region.
- In children more than 1 yrs - "Hot Cross Bun" appearance due to frontal and parietal bossing.
- Large head and delayed closure of anterior fontanelle.
- Delayed dentition with defective enamel.

- ❖ Permanent teeth also show defective hypoplastic enamel with grooving and pitting with high risk of caries.
- ❖ Rachitic rosary - costo chondral junction are enlarged and beaded.
- ❖ Pigeon chest- forward projection of sternum.
- ❖ Harrison's sulcus - a horizontal groove along the attachment of diaphragm due to contraction pulling the softened bone cage.
- ❖ Spine - kyphosis, scoliosis, lordosis.
- ❖ Limb - widened epiphysis of wrist and ankle, bending of long bones resulting in knock knee and coxa vera.

General manifestations

- ❖ Hepatomegaly
- ❖ Tetany
- ❖ Convulsion
- ❖ Frequent respiratory infection

Vitamin E (Tocopherol)

- ❖ It is one of the main fat soluble antioxidant in addition to carotenoids.
- ❖ It prevents oxidation of PUFA in cell membrane by free radicals.
- ❖ It reduces atherogenesis.

Sources

Nuts, Polyunsaturated vegetable oil, Seeds and Whole wheat grains.

Daily requirement

Infant

3 mg of alpha tocopherol.

Clinical features of deficiency

Deficiency result in decreased proprioceptive and vibration sensation due to posterior column degeneration and areflexia, gaze paresis and gait disturbances.

It produces haemolytic anaemia and retrolental fibroplasia in premature infants.

Vitamin K

Vitamin K is synthesized by intestinal bacteria.It is a coagulant vitamin required for the synthesis of unusual amino acid - Gamma Carboxy Gluthamic Acid, Which is essential for production of four coagulation factors (II, VII, IX, X)

Sources

Leafy vegetable and Liver

Daily requirement

1 mg

Clinical features of deficiency

- New born - haemorrhagic disease of newborn is due to defective transfer of vitamin K from mother to fetus and lack of bacteria in the intestine
- Obstructive jaundice
- Anticoagulant therapy
- Prolonged antibiotic therapy

Water soluble vitamins

Thiamine (B_1)

Thiamine function as a coenzyme thiamine pyrophosphate .It plays a major role in Kreb's cycle.

Brain is totally dependent on glucose for energy and so nervous system is affected early in thiamine deficiency.In the absence of vitamin B_1 cells cannot metabolise glucose aerobically.

It is essential for the metabolism of carbohydrates and in its absence pyruvic and lactic acids accumulate, which produces vasodilation and increase in cardiac output.

Sources

Outer layer of cereals like Rice, Wheat, Millets, Pulses, Nuts and Yeast.

Daily requirement

0.4mg/1000 Kcal

Clinical features of deficiency

It causes either cardiac involvement (wet beriberi) or nervous system involvement (dry beriberi)

Cardiac manifestations

- ❖ High output state due to pheripheral vasodilatation.
- ❖ Oedema due to retention of sodium and water.
- ❖ Biventricular failure.

Neurological manifestations

- ❖ Peripheral neuropathy - distal, symmetrical impairment of sensory, motor and reflex function.
- ❖ Wernicke's encephalopathy - (cerebral beriberi) global confusion, vomiting, nystagmus, ophthalmoplegia, fever, ataxia, coma.

Korsakoff's syndrome - impaired ability to learn and retrograde amnesia.

Riboflavin (Vitamin B_2)

Riboflavin enzymes are involved in

- ❖ Oxidative enzyme system in energy metabolism.
- ❖ Synthesis of glycogen and erythropoiesis.
- ❖ Cellular growth and tissue respiration.

Daily requirement

0.6 mg/1000 Kcal

Sources

Liver, Meat, Egg, kidney and Green leafy vegetables.

Clinical features of deficiency

- ❖ Glossitis (Sore, Magenta or red coloured, Glazed smooth tongue).
- ❖ Cheilosis (Cracking at the angle of mouth).
- ❖ Nasolabial dysbacea (Scaly dermatitis, Pruritis, Seborrhoea and Desquamation).
- ❖ Circumcorneal vascularization and keratitis.
- ❖ Watering of eyes or reduced lacrimal fluid, Photophobia and Blurred vision.
- ❖ Peripheral neuropathy.

Niacin (Pellagra Preventing factor or vitamin B_5)

Niacin is essential for,

- ❖ Functioning of skin, intestinal tract and nervous system.
- ❖ DNA synthesis and repair.

Daily requirement

6.6 mg/1000 Kcal

Sources

Liver, Groundnut, Whole cereals, Pulses, Meat, Fish, Egg and Milk.

Clinical features of deficiency

Deficiency is more prevalent in maize eating (leucine) population.

Pellagra presents as

- ❖ Gastrointestinal symptoms (Diarrhoea, Loss of appetite, Nausea, Vomiting, Achlorhydria)
- ❖ Neurological manifestations (Muscle weakness, Mental retardation or dementia, Loss of memory)
- ❖ Skin manifestations (Dermatitis, Casal necklace, Pellagrous glove and Pellagrous boot)

Pyridoxine (vitamin B_6)

Pyridoxine is essential for normal brain metabolism and growth of infant.

Daily requirement

0.5 - 1 mg/day

Sources

Liver, Meat, Fish, Yeast, Cereals and Legumes.

Clinical features of deficiency

Seizures, Peripheral neuropathy, Failure to thrive, Hyperirritability, Hyperacousis, Microcytic hypochromic anaemia, Nausea and Vomiting.

Cobalamin (Vitamin B_{12})

It plays an important role in nucleic acid metabolism and protein synthesis.

Daily requirement

0.2 – 1 μg

Sources

Present only in foods of animal origin such as Liver, Meat, Egg and Milk.

Clinical feature of deficiency

- Pernicious anaemia.
- Impaired synthesis of DNA and defective myelin formation.
- Bone marrow erythropoiesis is arrested.
- Megaloblastic reaction (immature form of RBC) result in macrocytic normochromic anaemia.
- Demyelination of large nerve fibre of spinal cord causes numbness, tingling sensation, sub acute combined degeneration of the cord.

Vitamin C

It is necessary for the

- Formation of collagen and intercellular matrix in the teeth, bones and capillaries.
- Tyrosine metabolism, Adrenal cortical function, Electron transport.

- ❖ Storage of iron in bone marrow, Spleen and Liver.
- ❖ As strong reducing agent it protects eye and lung.
- ❖ Maintain vascular integrity.

Daily requirement

30 mg/day

Sources

Citrus fruit and Vegetables like Tomatoes, Cabbage, Leafy green and Germinating pulses, Liver and Kidney.

Clinical features of deficiency

- ❖ In scurvy, bones are tender so the limbs are kept in frog like position.
- ❖ Haemorrhage under periosteum of long bones.
- ❖ Gum bleeding and Petechiae.
- ❖ Orbital or conjunctival haemorrhage.
- ❖ Prominent costochondral junction.
- ❖ Scorbutic rosary - Separation of epiphysis of ribs and backward displacement of sternum.
- ❖ Delayed wound healing.

Minerals

These are small inorganic elements and are indestructible unlike other major nutrients and vitamins.Calcium, Phosphorus, Potassium, Sodium, Chloride, Magnesium and Sulfur are known as macrominerals and are required in amount more than 100mgm per day, as they are present in relatively high amount in body tissues.

Sodium

It is the main electrolyte of extracellular fluid.

Daily requirement

1-2 gms/day

Sources

Common salt, Milk and Vegetables.

Clinical features of deficiency

Confusion, Anorexia, Lethargy, Cramps, Dehydration, Seizures, Hemiparesis and Coma.

Potassium

It is the main electrolyte of intracellular fluid.

Daily requirement

3- 4 gms/day

Sources

Banana, Orange, Lime, Apple, Pineapple, Almond, Beans, Dates, Yam, Potatoes and Tender coconut water.

Clinical features of deficiency

Muscle weakness, Ileus, Polyuria.

Flaccid paralysis and Cardiac arrest.

Calcium

- ❖ It is essential for transmission of nerve impulse and muscle contraction.
- ❖ It serves as intracellular messenger of different hormones.
- ❖ Takes part in blood coagulation.

Daily requirement

400 - 600 mg/day

Sources

Milk, Cheese, Yogurt, Ragi, Egg, Fish eaten with bone, Almond, Peanuts, Leafy vegetable and Dried fruits.

Clinical features of deficiency

Leads to Tetany, Ricket, Osteoporosis, Joint pain, Palpitation, Insomnia and Impaired growth.

Phosphorus

It plays an important role in the formation of bone, teeth, production of energy, RNA synthesis and acts as buffer system in blood.

Sources

Milk, Cheese, Egg, Cereals and Meat

Clinical features of deficiency

Ricket, Muscle weakness, Anorexia, Malaise, Bone pain.

Iron

It is necessary for the formation of haemoglobin.

It is used in erythropoiesis.

Sources

Green leafy vegetable, Fruits, Onion, Cereals, Pulses, Jaggery, Grapes, Dates, Animal foods like Meat, Liver, Fish, Kidney and Eggyolk. Vitamin C enhances iron absorption.

Clinical features of deficiency

- Anaemia – Pallor, Fatigue, Spleen enlarged, Cardiac enlargement, Atropy of tongue, Brittle nail, Kolionychia.
- Malabsorption
- Protein losing enteropathy

Iodine

It is required for the synthesis of thyroid hormone.

Daily requirement

50 µg – 150 µg

Sources

Sea water, Salt, Sea fish, Vegetable and Milk

Clinical features of deficiency

Congenital anomalies, Neurological and Myxedematous cretinism, Goiter and psychomotor defect in newborn.

Zinc

It improves Appetite, Wound healing and Sense of well being.

Daily requirement

5-10 mg/day

Sources

Grains, Beans, Nuts, Cheese, Meat and Shell fish

Clinical features of deficiency

Growth retardation, Hypogonadism, Anorexia, Alopecia, Acral dermatitis, Acro dermatitis, Enteropathica, Behavioral changes and increased susceptibility to infection.

Fluorine

It plays a major role in the prevention of dental caries.

Daily requirement

1.5 – 4.0 mg/day

Sources

Hard water, Sea fish and Tea

Magnesium

Present along with calcium in bones.

Daily requirement

300 mg/day

Sources

Cereals, Beans, Leafy vegetable and Fish

Clinical features of deficiency

Neuromuscular irritability, Tremors, Carpopedal spasm.

Copper

It is essential for connective tissue formation, Iron metabolism, Myelin formation, Melanin synthesis and utilization of oxygen during cell respiration and energy utilization.

Daily requirement

80 μg/day

Sources

Sea food, Meat, Legumes, Nuts, Cereals, Sugar and Milk

Clinical features of deficiency

Anaemia, Neutropenia, Hypopigmentation of hair and Skin, Vascular abnormalities, Osteoporosis, Metaphyseal fraying and fracture, Defective immune function.

Cobalt

Vitamin B_{12} contain cobalt.

It stimulates erythropoiesis.

Chromium

Sources

Whole grain, Pulses and Spices

Clinical features of deficiency

It causes glucose intolerance.

Selenium

It has intracellular antioxidant effect.It protects tissue and cell membrane against per-oxidation.

Clinical features of deficiency

It causes cardiomyopathy and myopathy

Trace Elements

The term trace is applied to concentration of elements not exceeding 250 micrograms.The definitive feature of a nutritionally significant trace element is either its essential intervention in physiological process or its potential toxicity when present at low concentration in tissues, food and drinking water.

Manganese

Sources

Cereals, Nuts, Leafy vegetables and Tea.

Clinical features of deficiency

It causes Growth impairment, Skeletal anomalies, Depressed reproductive function, Cartilage disorder.

Aetiology of Malnutrition

- Poverty
- Low birth weight
- Infections - Recurrent diarrhoea, Lower respiratory tract infection, Giardiasis, Shigellosis, Amoebiasis, Otitis media, UTI, Fungal infection, Scabies, Helminthiasis, Malaria.

- ❖ Population growth
- ❖ Feeding habits
- ❖ High pressure advertising of baby foods
- ❖ Social factors - Poor hygiene
- ❖ Chronic disease - Congenital heart disease, Primary complex, Chronic liver disease.
- ❖ Malabsorption syndrome
- ❖ Immuno deficiency - HIV
- ❖ Insulin dependent diabetes mellitus
- ❖ Renal tubular acidosis
- ❖ Inborn errors of metabolism
- ❖ Malignancies
- ❖ Psychological
- ❖ Drugs - antimicrobial

Risk factors

Child

- ❖ Age
- ❖ Sex
- ❖ Time between birth of siblings
- ❖ Age of mother at the time of birth
- ❖ Fetal maturity at birth
- ❖ Birth weight

- ❖ Breast feeding practices
- ❖ Immunisation of child
- ❖ Illnesses

Parents

- ❖ Obstertic history
- ❖ Maternal weight and height
- ❖ Maternal body mass index
- ❖ Single parent
- ❖ Age of mother and father
- ❖ Educational level of parents
- ❖ Occupation of parents

Environmental Demographics

- ❖ Origin of water used
- ❖ Type of sewage system
- ❖ Structure of toilet
- ❖ Number of persons living in house
- ❖ Ratio of number of tenant/ Number of wage earners in the home

Pathology

It is the nutrition which decides the immune status of an individual.Proteins, Lipids, Vitamin A, B_6, Zinc, Iron and Copper are known to affect immune response .Vitamin C and zinc deficiency impair phagocytosis.Undernutrition leads to frequent infection which inturn leads to further malnutrition forming a vicious cycle.

The resistance of the human to infection is adversely affected in malnutrition,

- The skin and mucosa do not offer effective physical barrier against infections.
- Impaired chemotaxis and normal phagocytosis is affected.
- Cell mediated immunity: The bacterial infection which require cell mediated immune response for protection against them tend to be unusually severe in malnourished subjects.The thymus gland and thymus dependent lymphoid tissues are atrophied and they cannot be easily sensitized by several antigens.Delayed hypersensitivity reaction which recall previous sensitization are also reduced.
- Humoral antibodies circulating immunoglobulin level are normal or elevated in malnourished subjects.Elevation of IgA is attributed to frequent association of gastrointestinal and respiratory infections.

The period of infectivity is prolonged because of increased duration of replication and shedding of pathogens.Systemic spread is also more common.Acute phase immune response is diminished.

Differential diagnosis

- Malabsorption syndrome
- Immuno deficiency
- Renal tubular acidosis
- Insulin dependent diabetes mellitus
- Chronic liver disease

Complications

- Severe dehydration and Electrolyte imbalance
- Diarrhoea
- Hypothermia
- Systemic infection, Septicemia and Shock
- Jaundice
- Bleeding disorders
- Oedema
- Hypoglycemia
- Congenital heart failure
- Severe anaemia
- Liver failure

Diagnosis

Blood

- ❖ Total count
- ❖ Differential count
- ❖ Erythrocyte sedimentation rate
- ❖ Haemoglobin
- ❖ Blood sugar
- ❖ Serum electrolytes
- ❖ Serum albumin
- ❖ Serum T_3, T_4 level, Cortisol and Growth hormone level

Urine

- ❖ Albumin
- ❖ Sugar
- ❖ Deposit

Anthropometry

- ❖ Weight
- ❖ Height
- ❖ Chest circumference
- ❖ Mid arm circumference
- ❖ Head circumference.
- ❖ Skin fold thickness

Prevention

“Prevention is better than cure”

- ❖ Consumption of well balanced diet.
- ❖ Breast feeding.
- ❖ Maintenance of normal nutritional level in the mother.
- ❖ Immunisation.
- ❖ Periodic de-worming.
- ❖ Food fortification.
- ❖ Vigorous promotion of family planning.

Balanced diet

Improvement of nutritional status of the individual is an essential component of primary health care.Prevention of malnutrition requires comprehensive systemic analysis and planning.

Balanced diet is one which will meet a persons caloric need and contain all nutrients particularly proteins and vitamins.In addition the food should satisfy the taste and desire of a person and should have enough roughage to promote the peristalsis.Balanced diet should contain 50 – 60 % carbohydrates, fats 30 – 35 % and proteins 10 – 15 % with necessary vitamins and minerals.

Common faults in Indian diet

- ❖ Dispropotinate nutrition.
- ❖ Mostly composed of carbohydrates 90% and inadequate protein
- ❖ Less amount of fats.
- ❖ Low caloric value.
- ❖ Deficiency of minerals (Calcium, Iron)
- ❖ Lack of variety and ignorance in proper cooking.

Breast feeding

It provides all the nutrients that a baby needs, as well as substances that promote growth and helps to fight against infections.

Nutritional content of breast milk

Macronutrients

Nutrients	Content / 100 ml
Calories	67 K cal
Proteins	1.1 gm
Fat	3.5 gm
Lactose	7.0 gm

Minerals / micronutrients

Nutrients	Content / 100 ml
Sodium	0.9 mEq
Potassium	1.4 mEq
Calcium	35 mg
Phosphorus	15 mg
Iron	30 – 50 micro gm
Zinc	120 micro gm

Vitamins

Vitamins	Content / 100 ml
Vitamin A	60 micro gm
Vitamin C	5.2 mg

Components of human milk

Components (gm / 100 gm)	Uses
Calories	71
Sugar	7
Protein Casein / Lactalbumin Amino acids	6.8 Ideal ratio. Adequate for brain development.Easily digested.
Fats	3.8 Polyunsaturated. Needed for brain growth.Source of energy.
Iron	0.05 to 0.1 but bioavailability is 49 %.
Enzymes	Lipase present helps in digestion.
Sugar Lactose	7 Aids brain growth.
Salt (m Eq / l) Sodium Chloride Potassium	Correct amount. 7 11 13

Minerals	
Calcium	34
Phosphorus	15
Iron (mg / L)	0.5 – well absorbed.
Zinc (mg / L)	4
Vitamins	Enough.
Vitamin A (micro gm)	53
C	1.2 – 10.8
D	1 – 1.78 (Prevent ricket)
E	0.56
K	26
Water	88 % Additional water is not needed.
Protective substances	Immunoglobulin (IgM, IgA). Leucocytes. Bifidus factor (Protects from E. coli infection). Lactobacillus bifidus (Promotes growth of lactobacilli). Lactoferrin (Unsuitable for the growth of enteric bacteria). Lysozyme. Antibodies present. Para amino benzoic acid (Protects from malaria). Anti staphylococcal factor. Phagocytes (Protects infant from necrotizing enterocolitis).
Bacterial contamination	None.

Maintenance of normal nutritional level in the mother

Mothers who are poorly nourished are unable to satisfy the nutritional needs of their breast fed infants.

Immunization

Infectious diseases can be prevented through immunization.

National immunization schedule

At Birth	:	BCG
		OPV zero dose
		Hepatitis B(1)
6 weeks	:	BCG (if not given at birth),
		DPT – 1
		OPV – 1
		Hepatitis B(2)
10 weeks	:	DPT – 2
		OPV – 2
14 weeks	:	DPT – 3
		OPV – 3
6 - 9 months	:	OPV – 4
		Hepatitis B(3)
9^{th} month	:	Measles
15^{th} month	:	MMR
18^{th} month	:	DPT (1 booster)
		OPV (5)

5 years	:	DPT (2 booster)
		OPV (6)
10 years	:	TT
		OPV (7)
		Hepatitis B (1 booster)
15 -16 years	:	TT

Optional vaccines

- ❖ Haemophillus influenza type B
- ❖ Varicella vaccine
- ❖ Hepatitis A vaccine
- ❖ Typhoid vaccine.

Periodic de-worming

Most helminths are potentially pathogens to human being, if these are present in sufficient amount, these may cause disease in childrens.so they have to be dewormed periodically.

Food fortification

Micronutrients is added to common foods.Addition of micronutrients will not change the taste and appearance of the food.Examples are fortification of common salt with iodine , sugar and ghee with vitamin A and cereals with iron.

Vigorous promotion of family planning

It will limit the family size and curbs galloping growth.

Correlation between modern and siddha aspect

The definition for MANTHAM said in siddha literature correlates more or less with the clinical features of FAILURE TO THRIVE.

In FAILURE TO THRIVE the infant looks small for age, rate of weight gain is sluggish, weight is below 3rd percentile.The child assumes infantile posture with clenched fists.He has a wide eyed expression or expressionless face and avoid direct gaze.Vocalisation is delayed and gross motor activity is curtailed.Response to social stimuli is inadequate.

கருவில் தோன்றும் நோய் (Karuvil thondrum noi)

"பேறு இளமை இன்பம் பிணி முப்பு
சாக்காடு ஆறும் கருவில் அமைப்பு"

A good pregnancy out come (a healthy mother and a healthy baby at the end of pregnancy) requires adequate nutrition besides freedom from other harmful influences.Under nutrition during pregnancy results in intra uterine growth retardation (IUGR) and low birth weight in babies besides complications such as anaemia and toxaemia in the mother.

Growth spurt in human brain takes place between last 8 weeks of gestation and several months of post natal life.As cell division and myelination takes place at certain predetermined chronological times, deprivation of nutrients during this critical period may result in restricted brain development.Number of brain cells may become less and the deficit will persist into adult life.

A balanced diet right from the beginning to the end of pregnancy and in post natal life must be ensured to create a healthy and better generation in future.There is a possible link between undernutrition in intrauterine life and development of degenerative disease in adulthood.It appears that the kind of adult one is going to be decided in the womb itself.

When essential nutrients are not made available to a growing fetus through maternal nutrition, it leads to different type of organ or tissue damage in the fetus.The deleterious consequences of which may be manifested in adult life.Those individual who had deficiencies during their intra uterine period with consequent organ or tissue damage, when exposed to a life of affluence late are likely to develop degenerative diseases.

If maternal food intake is reduced to the point at which maternal fat stores are catabolized, maternal ketonemia and ketouria will result.Maternal ketonuria has been associated with intellectual impairment of the offspring.

For the fetus to grow optimally nutrition and oxygen in sufficient quantities must be transported from the uterine circulation across the placenta and into the fetal circulation, which in turn must distribute these substances to all fetal tissues in accordance to their metabolic requirements.Fetal growth may be disturbed if any element in this sequence is altered.

Glucose is qualitatively the most important nutrient for fetal growth and metabolism.In normally nourished mothers, Glucose accounts for approximately 50% of the total substrate required for oxidative metabolism

by the fetus.Lactate which is found in large quantity in fetal blood, accounts for about 25% of the total fetal oxidative metabolic rate.Amino acids provide 20% of total fetal oxidative requirement.Acetate, Free fatty acids, Glycerol and Keto acids provide the remaining 5% of substrate for fetal oxidative metabolism.

When the mother's nutritional status is altered, the mix of metabolic substrate available to the fetus can be considerably disturbed.In particular, transplacental passage of glucose falls, where as amino acid transport and utilization increases.Although fetal oxidative metabolic rate may not change initially, amino acids and fatty acids provide about 90% of the substrate for fetal oxidative metabolism, with glucose providing only the remaining 10%.When the severity and duration of maternal under nutrition are substantial, the fetus will cease to grow, because approximately 35 – 50% of the total fetal caloric intake is utilized for growth.So in undernourished mothers, nutrition for fetal metabolism are substantially reduced.

அஸ்தியில் சூடு உண்டாகும்

(Bone and bone marrow manifestations)

- In Fluorine deficiency - crippling skeletal deformities including deformities of spine and joints, endemic genu valgum, osteoporosis.
- In Vitamin C deficiency - tender bones, hemorrhage under the periosteum of long bones, scorbutic rosary and anaemia.
- In Vitamin D deficiency - craniotabes, delayed closure of anterior fontanelle, pigeon chest, rachitic rosary, bow legs, knock knees, coxa vera, bosing of frontal and parietal bones.
- In Calcium deficiency - osteoporosis, rickets.
- In Phosphorus deficiency – rickets.
- In Manganese deficiency - skeletal abnormalities.

(Bone marrow manifestations)

- In Vitamin B_{12} deficiency - bone marrow erythropoiesis is arrested.
- In Copper deficiency - anaemia, neutropenia, osteoporosis, metaphyseal fraying and fractures.
- In Protein energy malnutrition - leucopenia, anaemia and thrombocytopenia.
- In Vitamin E deficiency - anaemia, thrombocytopenia, reticulocytosis and abnormal erythrocyte metabolism.

உதடுகள் வெடித்து வாயில் புண் உண்டாகும்

(Glossitis and cheilosis)

- In Riboflavin deficiency - angular stomatitis, glossitis, cheilosis, nasolabial dysbacea.
- In Folic acid deficiency - ulcers, glossitis.
- In Pyridoxin deficiency - glossitis, angular stomatitis, cheilosis.

நெஞ்சு உலரும்

(Respiratory manifestations)

- In PEM- atrophy of intercostal muscles and other muscles of respiration including diaphragm.

குழந்தை அன்னையைத் தேடியழும்

(Irritable child)

- In Thiamine deficiency - dry beriberi (irritability, fatigue, anorexia, growth failure, indigestion)
- In Protein energy malnutrition - apathetic, irritable, drowsy.
- In Magnesium deficiency - Irritablity.
- In Vitamin C deficiency - Listless, anorexia, fretful and cries on handling.
- In Pyridoxine deficiency - Failure to thrive, hyperirritability, nausea, vomiting.

வாய் திறக்க ஒட்டாது

(Inability to open the mouth)

- ❖ In Riboflavin deficiency – angular stomatitis, cheilosis and glossitis.
- ❖ In Fluorine deficiency – dental caries.
- ❖ In Pyridoxine deficiency – angular stomatitis, cheilosis and glossitis.

குழகுழவென்று கழிச்சலாகும்

(Diarrhoea)

Occurs in Vitamin K, Vitamin B_{12}, Niacin and Folic acid deficiencies.

உடல் குளிரும், சுரம் இருக்கும், மூச்சில் அனல் வீசும்

(Fever with chills)

Due to infection in protein energy malnutrition.

DRUG REVIEW OF TRIAL MEDICINE

PREPARATION AND PROPERTIES OF TRIAL MEDICINE

OMATHY URUNDAI: (Internal medicine)

Reference book: BALAVAGADAM (Page 51)

"என்றே யோமம் திப்பிலிசுக் கிருசீ ரகமுங் கொத்துமலி
பன்னா மையோடு குரோசனி பகர நிறுத்த தோர் நிறையாய்த்
துன்னா நீரிற் றானரைத்துத் துதித்த நல்ல துவரை யென
உண்டை **மாந்த** முள்ளவெலா மோடுங் கண்டா யுண்மையிதே"

(பாலவாகடம் - பக்கம் 94)

Ingredients

- ❖ Omam
- ❖ Thippili
- ❖ Chukku
- ❖ Seerakam
- ❖ Karum Seerakam
- ❖ Kottha Malli
- ❖ Amaiottu Kari
- ❖ Kurosani Omam

Preparation of the trial medicine

The above eight drugs are taken in equal quantity, then they are purified, powdered and then grinded with water in kalvam and made into a waxy consistency, then roll it into pills about a size of 100mgm.

Dose

One pills (100 mgm), 3 times a day, with hot water.

Indication

Mantham.

Properties of the trial drugs

OMAM

Botanical Name : Trachyspermum roxburghianum(ammi) Carum copticum Benth ex.

Family : Apiaceae

Synonyms : Azamatham, Theepiam, Ajowan, Bishop's weed

Useful Part : Seed

Suvai : Karppu

Thanmai : Veppam

Pirivu : Karppu

Seigai : Stomachic, Antispasmodic, Carminative, Antiseptic, Stimulant, Tonic, Sialogogue

Ajowan Oil : Antiseptic, Aromatic, Carminative.

Pothu Gunam

"சீதசுரங் காசஞ் **செரியாமந் தமபொருமல்**
பேதியிரைச் சல்கடுப்பு பேராமம் - ஓதிருமல்
பல்லொடுபல் முலம் பகமிவைநோ யென்செயுமோ?
சொல்லொடுபோம் ஓமமெனச் சொல்"

(மூலிகை குணபாடம் - பக்கம் 174)

Purification

Dipped in lime stone water for 3 hours and then dried.

Chemical Constituents

Characteristic odour and taste is due to the presence of an essential oil (2-4%).Other constituents of fruit include sugars, tannins and glycosides. Ajowan oil was principle source of thymol (35-60%) and some Carvercrol.Thymol easily crystallizes from oil on cooling and is known as 'Ajowan ka Phool' (flower of ajowan) or "Sat Ajowan". Remaining oil is called thymine.

Uses

Omam is used in Cholera, Diarrhoea due to indigestion, Abdominal pain and distention, Peptic ulcer and Hepatosplenic disorders.It increases appetite.

THIPPILI

Botanical Name : Piper longum

Family : Piperaceae

Synonyms : Arrkathi, Unzaram, Ulavainazi, Kaman, Kudari, Kolam, Koli, Kozhaiaruki, Saram, Saadi, thulavi, Maagathi, Kanai.

Parts Used : Unripe fruit

Fresh

Suvai : Inippu

Thanmai : Veppam

Pirivu : Inippu

Dried

Suvai : Karppu

Thanmai : Veppam

Pirivu : Inippu

Seigai : Carminative, Stimulant, Tonic, Stomachic, Analgesic, Antihelmintic, Sedative, Haematinic, Cholagogue, Emmenagogue, Abortifacient

Pothu Gunam

"திப்பிலியின் றண்டுலஞ் சிலேத்மத்தைப் போக்கிவிடும்
உப்பிசத்தை மேகத்தை ஓட்டுங்காண - தப்பாமல்
வாத சுரந்தணிக்கும் மாகபரோ கந்தொலைக்கும்
தாதுவை வளர்ப்பிக்குஞ் சாற்று"

(மூலிகை குணபாடம் - பக்கம் 516)

Purification

Dipped in cithiramula kudineer for half a day and then dried.

Chemical Constituents

Fruit contain Sylvatin, Sesamin, Diaeuolemin, Piperine, Pipalartine, Asparinin, Pulviatilol, Pipericide, Guineenside, Longamide, Piplasterol and piperonaline.

The alkaloid Piperine involves in enhancement of bioavailability. It increases blood level of herbal drugs. The bioavailability enhancement probably result from the fact that piperine is a potent inhibitor of drug metabolism.

Uses

Thippili is used in Peptic ulcer, Anaemia and Liver disorders.

CHUKKU

Botanical Name : Zingeber Officinale Rosc

Family : Zingiberaceae

Synonyms :Arukkan, Athagam, Artharagam, Ubagullam, ularntha inji, Kadupathiram, Chundisoundi, Souubanam, Sowvaranam, Navasuru, Nagaram, Manosatham, Vichavabachatham, Vidamudiamirtham, Ver kombu.

Parts Used : Rhizome

Suvai : Karppu

Thanmai : Veppam

Pirivu : Karppu

Seigai : Stimulant, Diaphoretic, Stomachic, Expectorent, Carminative, Tonic, Antiemetic

Pothu Gunam

"சூலை**மந்தம் நெஞ்செரிப்பு தோடமேப் பம்மழலை**
மூலம் இரைப்பிருமல் மூக்குநீர் - வாலகப
தோடமதி சாரந் தொடர்வாத குன்மநீர்த்
தோடம் **ஆமம்** போக்குஞ் சுக்கு"

(மூலிகை குணபாடம் பக்கம் - 470)

"சுக்கிற்கு மிஞ்சிய மருந்துமில்லை" - பழமொழி

Purification

Remove the outer skin and dip it in lime stone water for an hour and then dried.

Chemical Constituents

The rhizome contain starch 40-59%, crude fibre 4.8-9.8%, essential oil 1.0-2.7%, fixed oil, pungent compounds, resin, protein and minerals.Volatile oil content of dried ginger is 1-3% they are Borneol, Zingiberene, Gingrol, Shogeol, Camphene, Phellandrene, Cineol, Citral.Ginger oleoresin is extracted from dried ginger by extraction with organic solvents.Fresh oleoresin of ginger contain 22% Gingerol and 3% Shogaol.Ginger contain Zingiberine 38.6%, a sesquiterpene hydrocarbon.

Uses

It is used in diarrhoea due to indigestion and in loss of appetite.

SEERAKAM

Botanical Name : Cuminum cyminum.Linn.

Family : Apiaceae

Synonyms : Asai, Seeri, Ubakumbapeesam, Narseeri, Thuthasambalam, Prathivika, Pittanazini, Poojana Kudoori, Mathiyam.

Parts Used : Seed

Suvai : Karppu

Thanmai : Thadpam

Pirivu : Inippu

Seigai : Carminative Aromatic

Stimulant Coolent

Stomachic

Pothu Gunam

“பித்தமெனு மந்திரியைப் பின்னப் படுத்தியவன்
சத்துருவை யுந்துறந்து சாதித்து - **மத்தனெனும்**
ராசனையு மீவென்று நண்பைப் பலப்படுத்தி
போசனகு டாரிசெயும் போர்”

- தேரன் வெண்பா.

Purification

Fried mildly

Chemical Constituents

Fatty oil (10%) Resin, Mucilage, Gum, Protein compounds,Malates, Essential oil to which the aromatic odour and taste is due to.A valuable essential oil “THYMENE” rich in Carvone obtained from the seeds contains Cuminol or Cumin aldehyde 56pc, a mixture of hydrocarbon, Cymene or Cymol, Terpene etc.Thymol occurs fairly in large propotion in the oil of ajowan.

Uses

It is used in Abdominal pain, Liver disorders, Indigestion and Loss of appetite.

KARUM SEERAKAM

Botanical Name : Nigella sativa.Linn

Family : Ranunculaceae

Synonyms : Aranam, Ubakunjigai

English Name : Black Cumin

Parts Used : Seed

Suvai : Kaippu

Thanmai : Veppam

Pirivu : Karppu

Seigai : Carminative, Anthelmintic, Diuretic, Galactogogue, Emmenagogue, Stomachic, Parasiticide, Emollient

Purification

Dipped in lime stone water for one hour and then dried.

Chemical Constituents

Seed contain Essential oil, Glucoside, Melanthin, Bitter substances.It contain 1.5% essential oil , 35% fixed oil and amorphous glycosidal saponin Melanthin, 1% Melanthigenin.Fresh seeds contain of Cineole, Eugenol, Sesquiterpenes and d-terpenes.Leaves yield 0.5% essential oil containing Methyl Cinnamate, Linolool and Terpenone.

Uses

It is used in Abdominal pain and distension, Peptic ulcer, Jaundice and Vomiting.

KOTTHAMALLI

Botanical Name : Coriandrum sativum.Linn

Family : Apiaceae

Synonyms : Urilarizi, Dhania

English Name : Coriander seed

Parts Used : Seed

Suvai : Karppu

Thanmai : Seetha veppam

Pirivu : Karppu

Seigai : Stomachic Carminative
Stimulant Diuretic

Pothu Gunam

"கொத்துமல்லி வெப்பம் குளிர்காய்ச்சல் பித்தமந்தஞ்
சர்த்திவிக்கல் தாகமொடு தாதுநட்டம் - கத்தியெழும்
வாத விகார்மடர் வன்கர்த்த பிவிரணம்
பூதலத்தில் லாதகற்றும் போற்று"

- மூலிகை குணபாடம் (பக்கம் 390).

Purification

The weeds are removed and then fried.

Chemical Constituents

Aromatic odour and taste of coriander seed is due to an essential oil. It contain 1-8% of volatile oil.The distilled oil contain 65-70% of Coriandrol, small amount of Pinene, Terpinene, Limonene and p-Cymene

together with various non-Linolool, alcohol and esters.Some 40 constituents has been identified.Other constituents are Flavonoids, Coumarins, Iso Coumarines, Phthalide and Phenolic acids.High content of fat 16-28% and protein 11-17%. Unripe fruit yield Aldehyde.

Uses

It is used in Belching, Indigestion, Dryness of tongue, Vomiting, Hiccup and Halitosis.

AMAIOTTU KARI

Zoological Name : Chelonia turtle

Class : Reptilia

Order : Chelonia

Synonyms : Kurman, Kuunan, Kachabam, Kamadam, Kamadathari.

Part Used : Ottu kari

Purification

Mix equal amount of pooneeru and karchunambu, add eight fold water and make it to settle. The water above it is taken and amaiodu is put in that water and boiled until oily substances are removed.Then the odu is washed in pure water and burnt into ashes.

Uses

According to pancha bootha theory, each bootham has got its own colour.Amaiodu which comes under prithivi bootham is golden in colour. Out of five asayams and five kosams the medicines made of amaiodu acts on amarvasayam, malavasayam and annamayakosam.

- ❖ Amaiottu karukku kudineer is used in mantham.
- ❖ Amaiottu karukku is used in mantham, kanam, aziranam.
- ❖ Amaiottu parpam is used in mantham, kanam.

KUROSANI OMAM

Botanical Name : Hyoscyamus niger.Linn

Family : Solanaceae

Synonyms : Thippiyam, Karabi, Karsarai

English Name : Henbane seed

Part Used : Seed

Suvai : Karppu

Thanmai : Veppam

Pirivu : Karppu

Seigai : Hypnotic Sedative
Anodyne Antispasmodic
Diuretic

Pothu Gunam

"வெகுமுத் திரம்வாதம் வீரியநட் டம்புண்
உகுபேதி யுட்கடுப்பி னோடே - மிகுகரப்பான்
தீராக் கபமிவைபோம் செய்யகு ரோசானியென்றால்
வாரா மயக்கமுறு மால்"

- (மூலிகை குணபாடம் பக்கம் 176)

Purification

Remove the weeds and then dried.

Chemical Constituents

Alkaloid-Hyoscyamine, Scopolamine with little Atropine.

Uses

It is used in Diarrhoea and Abdominal pain.

ADJUVANT (ANUPANAM) - HOT WATER

Pothu Gunam

"நெஞ்செரிப்பு நெற்றிவலி நீங்காப் **புளியேப்பம்**
வஞ்சமுற வந்த **வயிற்றுநோய்** - விஞ்சியே
வீழாமக் கட்டோடு வெப்பிருமற் கட்டநீர்
ஆழாக்குட் கொள்ள அறும்."

- (சித்த மருத்துவாங்க சுருக்கம் பக்கம் 147)

Uses

Used in Belching and Gastric disorders.

Mode of Action

- 90% of the raw drugs used in this medicine has carminative, stomachic and stimulant action.
- The carminatives expel gas from the stomach or the intestine and relieves colic.Most of the drugs which act as carminatives are aromatic volatile oils, which are present in the above drugs.The “gripe water” mixtures used in infants to reduce griping contain volatile oil.
- Stomachic act as stimulant by exciting the functional activity of stomach.
- The alkaloid Piperine present in piper longum involves in enhancement of bioavailability.It is due to the fact that it is a potent inhibitor of drug metabolism.
- Anodyne, Sedatives and Antispasmodic reduces pain.
- Parasiticide, Anthelmintic act by killing the parasites and worms, or by rendering them powerless.
- Haematinic, Tonic improves the quality of blood and restores the normal tone of the body.
- Emollient and Coolent keeps the body cool and prevents drying of the skin due to dehydration.

MATERIALS AND METHODS

In this dissertation twenty cases of "AKKARA MANTHAM" are treated in the In-patient ward of post graduate –IV, kuzhanthai maruthuvam department, Government siddha medical college & hospital, palayamkottai.

Selection of cases

The clinical trial is carried out both in male and female children of age group between 1-12 years.Though mantham occurs commonly between the age of 1 – 3 years, it is also prevalent in other age groups.All cases were carefully and thoroughly examined before admission.Severe and complicated cases were excluded .Detailed history about the antenatal care, perinatal period, birth weight, breast feeding, any other serious illness and hospitalisation for any reason were recorded in the case sheet proforma.

Inclusion criteria

1. Pallor
2. Loss of appetite
3. Bone deformity
4. Insomnia
5. Dyspnoea on exertion
6. Ulceration of mouth
7. Redness of tongue
8. Fever
9. Fever with chills

10. Diarrhoea
11. Emaciation
12. Nausea & vomiting

Exclusion criteria

1. High grade fever more than 102^0 F
2. Seizure
3. Marasmus and Kwashiorkor
4. Cases with HIV
5. Dyspnoea due to cardiac cause
6. Diarrhoea requiring IV fluids
7. Unconscious patients
8. Severe abdominal pain with distention

The efficacy of the trial drug "OMATHY URUNDAI" is identified by the following materials and methods:

- ❖ Identification of the individual drugs
- ❖ Purification of the raw drugs
- ❖ Preparation of medicine
- ❖ Properties of individual drugs
- ❖ Biochemical analysis
- ❖ Pharmacological analysis

The disease “AKKARA MANTHAM” is identified by the following materials and methods:

- Anthropometry
    1. Weight
    2. Height
    3. Chest circumference
    4. Mid arm circumference
    5. Head circumference
    6. Skin fold thickness
- Biochemical assessment
- Clinical assessment
    1. Evaluating clinical symptoms mentioned in siddha literature (Poriyaalarithal, Pulanaalarithal, Ezhu udal thathukkal, Mukkuttra nilai, Ennvagai thervu, Neerkuri, Neikuri)
    2. Evaluating clinical symptoms mentioned in modern literature.
- Dietary assessment
- Immunisation data
- Temprature monitering
- Radiological assessment
- Biostatical analysis

Efficacy of the medicine Omathy urundai is identified by

1. Identification of the individual drugs:

   The drugs are identified and their morphology and botanical names are confirmed.

2. Purification of the raw drugs
3. Preparation of medicine
4. Properties of the individual drugs

   - are discussed before.

5. Biochemical analysis
6. Pharmacological analysis

   - are discussed later.

Akkara mantham is diagnosed by

1. Anthropometry

- **Weight**

Weight of the baby is calculated by

Wt of the baby at birth – X

Expected Wt at 6 months – 2X

Expected Wt at 1 Yrs – 3X

Expected Wt at 2 Yrs – 4X

Expected Wt at 2-12 Yrs – $\frac{\text{Age} + 3 \times 5}{2.2}$

Expected Wt at 7 Yrs – 7X

Expected Wt at 10 Yrs – 10X

❖ **Weight for age**

Can be calculated by using the following formula

From 3 mon -1 yrs (wt in kg) $= \frac{\text{Age in month} + 9}{2}$

1-6 yrs (wt in kg) = Age in years × 2+8

6-12 yrs (wt in kg) $= \frac{\text{Age in years} \times 7-5}{2}$

Gomez classification of malnutrition

Weight for age %	Grade of malnutrition
>80 %	Normal
71-80 %	Grade 1
61-70%	Grade 2
51-60 %	Grade 3
<50 %	Grade 4

Welcome classification of malnutrition

Weight for age %	Oedema	
	Present	Absent
80-90 %	Kwashiorkor	Under Nutrition
<60 %	Marasmic kwashiorkor	Marasmus

Height

Length of baby at birth = 50 cm

At 1 yrs length = 75 cm

At 2 yrs height = 87 cm

At 3 yrs height = 93 cm

Expected height from 2-12 yrs:

Height in cms = (Age in years ×6) + 77

Head circumference

Place the tape over the occipital bone at the back and just over the supra orbital ridges infront.

At birth = 35 cm

At 6 month = 43 cm

At 1 yrs = 45 cm

At 2 yrs = 47 cm

At 7 yrs = 50 cm

At 12 yrs = 52 cm

Mid arm circumference (MAC)

It is constant between 1-5 yrs

- MAC with inch tape

Grade	Cms
Normal	16 cm
Mild	13.5 – 16 cm
Moderate	12.5- 13.5 cm
Severe	< 12.5 cm

- ❖ Bangle test
- ❖ Shaker's tape
- ❖ Quick stick method

Skin fold thickness

The subcutaneous fat thickness is measured with Herpenden's caliper over the triceps or subscapular region.The fat thickness is 10mm or more among healthy children between 1-6 yrs of age. If it is less than 6mm it is indicative of moderate to severe degree of malnutrition.

Biostatical analysis

All the data observed in the present study were analysed statistically.Wherever necessary the "Chi-square Test of Goodness of Fit" was applied to test the significance of the discrepancy between the observed data and theoretically expected data, by using the formula

$\chi 2 = \Sigma\left(\frac{(O-E)^2}{E}\right)$, where 'O' is observed data and 'E' is expected data or data before treatment.Further wherever possible the data were statistically represented by suitable figures.

Study of clinical diagnosis

A case sheet was prepared to diagnose the disease on the basis of siddha methodology and modern methodology.Individual case sheet was maintained for each and every patients.

First of all the name, age, sex, father's occupation and income, address, informant, reliability and religion should be recorded.

In complaints and duration, the complaints should be recorded in chronological order of their appearance.

In history of present illness the origin, duration and progress of various symptoms and relevant positive and negative history should be enquired.

In history of past illness ask about similar illness in the past, any other significant illness and treatment history should be recorded.

In antenatal history age of the mother, weight and height of the mother, booked or not, antenatal checkup, weight gain during pregnancy, interpregnancy interval, any other illness and abortion should be recorded.

In perinatal history birth order, gestational age and birth weight should be recorded.

In neonatal history first feed, time interval between birth and first feed.

In developmental history the appearance of milestones at various age should be recorded.

In diet history details of feeds, how long breast feed continued, dilution of feeds, when weaning was started, complementary foods, quality and quantity of food should be recorded.

In diet chart details of diet taken in one day and the total calories and proteins in the food is calculated.

In immunization history details of immunization whether given in appropriate age.

In history of allergy and contact, any contact with known case of TB patients is noted.

In family history consanguinity, number of siblings, any illness in family, occupation of parents, broken family, single parents, literacy of parents and food fads are noted.

In socio economic history per capita income, type of house, living space, ventilation, water facilities, toilet facilities, amount spent for food and medical facilities are noted.

$$\textbf{Per-capita income} = \frac{\text{TOTAL INCOME OF THE FAMILY}}{\text{NUMBER OF FAMILY MEMBERS}}$$

In general examination consciousness, nutritional status, any wasting, respiratory distress, anaemia, jaundice, cyanosis, clubbing, oedema and lymphadenopathy is noted.

Anthropometry measurement is noted.

In vital signs heart rate, pulse rate, respiratory rate, temperature and blood pressure is noted.

In systemic examination head to foot examination, abdomen, central nervous system and cardio vascular system are examined.

In investigations blood TC, DC, ESR, HB, sugar, urea, creatinine, serum total protein, serum electrolytes and blood culture are examined.In urine Albumin, Sugar, Deposits are examined.Stool examination for consistency, blood staining, fat content,ova, cyst, RBC, P_H and reducing substances are investigated.

X- Ray chest, urine culture and sensitivity, blood grouping and serum cholesterol are investigated.

OBSERVATIONS AND RESUTLS

The results and observations obtained during the trial study is recorded in the following order:

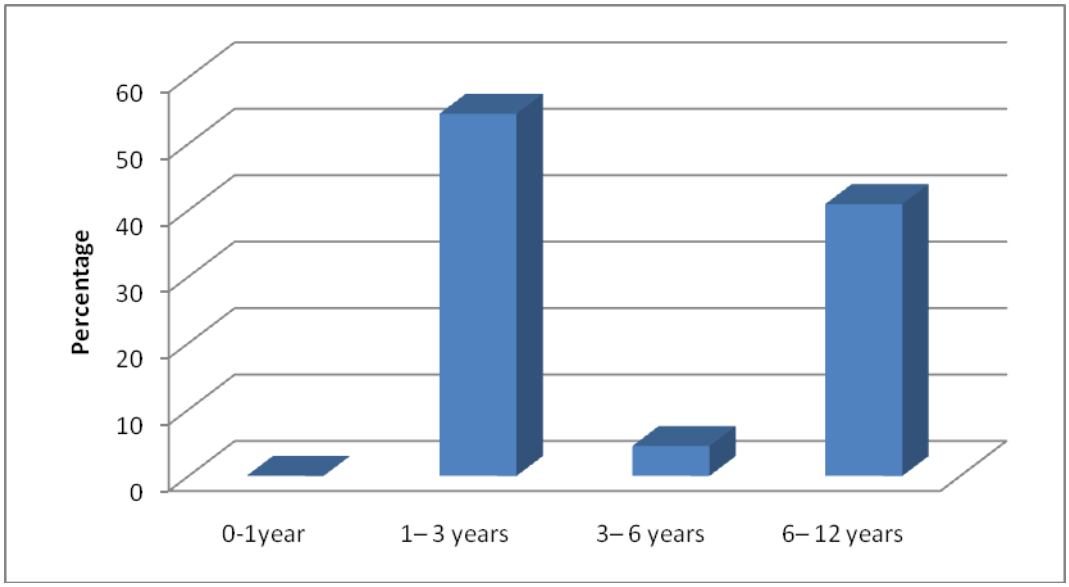
1. Age distribution.
2. Sex distribution.
3. Religion distribution.
4. Family history
5. Informant.
6. Paruva kaalangal.
7. Thinaigal.
8. Diet.
    i. Food habit.
    ii. Breast feeding.
    iii. Diet chart
9. Social environmental factors.
    i. Parent's occupation.
    ii. Socio-economic status.
    iii. Water source.
10. Anthropometry.
11. Nutritional status.
12. Aetiological factors.
13. Clinical features

14. Uyir thathukkal.
15. Udal thathukkal.
16. Ennvagai thervugal.
17. Nei kuri.
18. I.P.Case sheet report.
19. Investigations
    i. Haematological report
    ii. Urine and motion analysis
20. Prognosis assessment.
21. Remarks.
22. O.P.Case report.

Table – 1. Age distribution

S.No	Age	No. of cases (out of 22)	Percentage
1	0-1 year (Kappu and Senkeerai)	-	-
2	1 year – 3 years (Varugai, Thaalattu, Sappaani, Mutham)	12	54.5%
3	3 years – 6 years (Ambuli, Chitrill, Siruparai, Siruther, Paethai (female) & Pillai (male) paruvam)	1	4.5%
4	6 years – 12 years (Pedumbai (female) Chiruparuvam (Male) paruvam)	9	40.9%

Fig : 1 To Show the distribution on the basis of age



The above table indicates that children under the age group of 1- 3 yrs (54.5%) are mostly affected.Though mantham occurs commonly between the age of 1-3 years, it is also prevalent in other age groups.

Table – 2. Sex distribution

S.No	Sex	No. of cases (out of 22)	Percentage
1	Male	15	68.2%
2	Female	7	31.8%

Among 22 cases, 15 were males (68.2%) and 7 were females (31.8%) .For this table ($p > 0.05$) .

Fig.2 To show the distribution according to sex

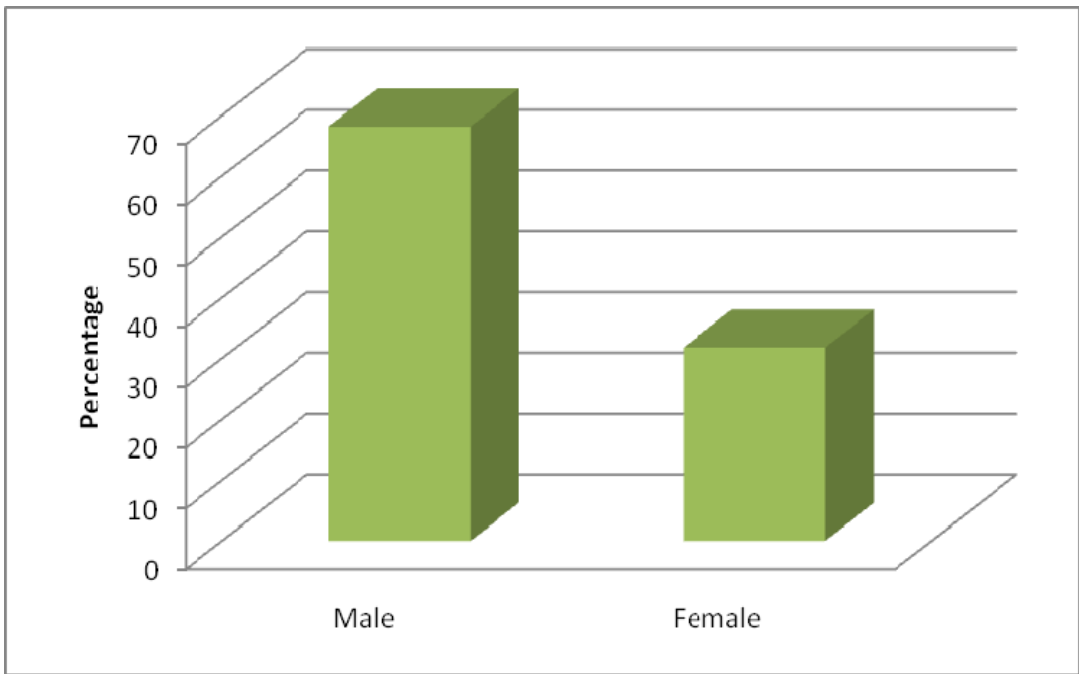


Table – 3. Incidence of religion

S.no	Religion	No. of cases (out of 22)	Percentage
1	Hindu	13	59.1% ($p < 0.02$)
2	Christian	5	22.7%
3	Muslim	4	18.2%

Out of 22 cases 59.1% were Hindus, 22.7% were Christians and 18.2% were Muslims.

Fig. 3 To show the distribution according to religion

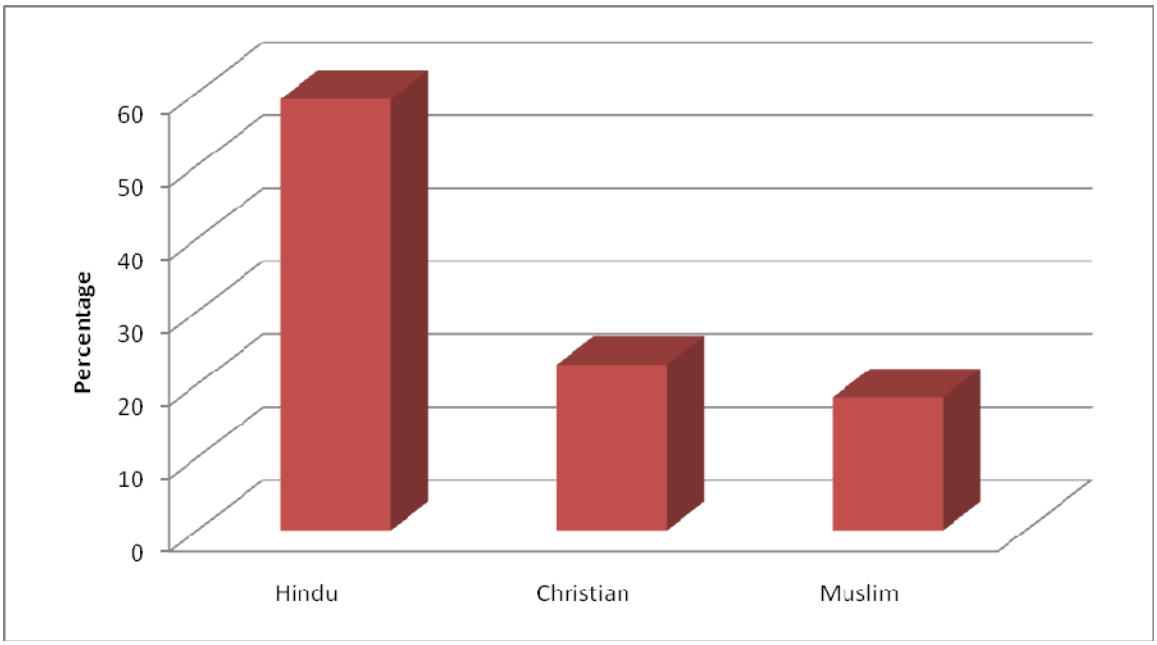


Table – 4. Family history

S.no	Family history	No.of cases (out of 22)	Percentage
1	Present	15	68.2%
2	Absent	7	31.8%

Among 22 cases, 68.2% of the patients have positive family history.For this table ($p > 0.05$).

Fig. 4 To show the occurrence in the family history

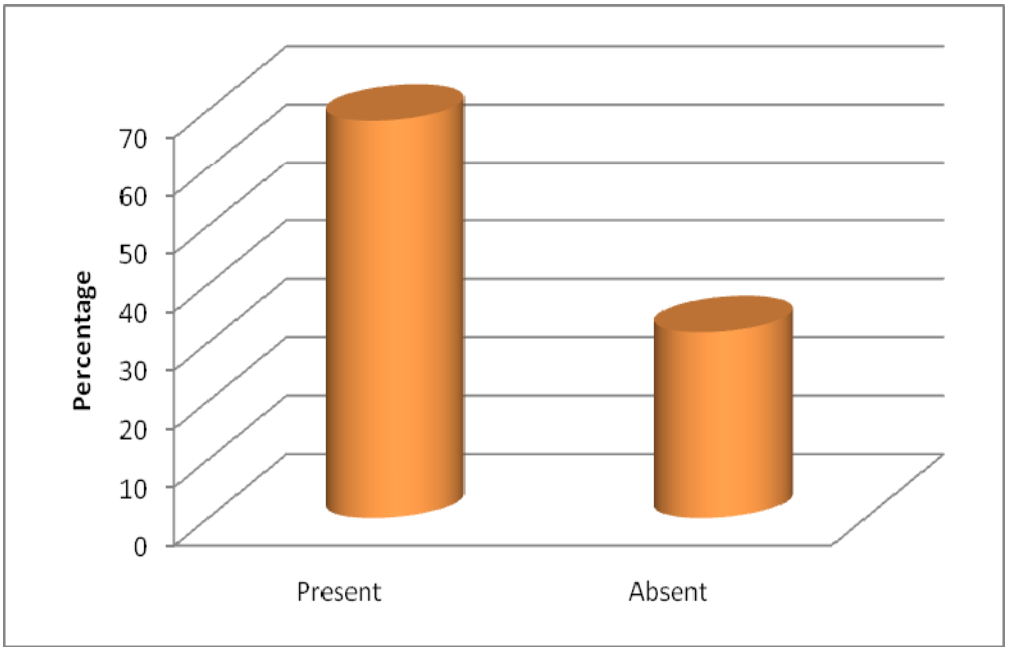


Table-5. Informant

S.No	Informant	No.of.cases(out of 22)	Percentage
1.	Mother	15	68.2%
2.	Father	3	13.6%
3.	Grand parents	2	9.1%
4.	Others	2	9.1%

According to this 68.2% of cases have good reliability, 13.6% have fair reliability, 9.1% of cases have poor reliability and 9.1% of cases have no reliability.

Table – 6. Distribution in Paruva kaalangal

S.No	Paruvakaalam	No. of cases (Out of 22)	Percentage
1	Kaar (Aavani, Purattasi)	-	-
2	Koothir (Ayppasi, Karthigai)	4	18.2%
3	Munpani (Maarkazhi, Thai)	12	54.5%
4	Pinpani (Maasi, Pankuni)	4	18.2%
5	Elavenil (Chithirai, Vaikasi)	2	9.1%
6	Muthuvenil (Aani, Aadi)	-	-

Most of the cases are affected during Munpani kaalam.

Table – 7. Distribution in Lands

S. No	Thinai	No. of cases (out of 22)	Percentage
1	Kurinji (Hill)	-	-
2	Mullai (Forest)	-	-
3	Marutham (Fertile)	20	90.9%
4	Neithal (Coastal)	2	9.1%
5	Paalai (Desert)	-	-

According to siddha concept, no disease occurs to the people living in marutham, but today people's life style is entirely differs from their ancestors both in dietary and other habits. Since the study was conducted in and around Tirunelveli, a marutham land.Majority of the cases is from that land.

Fig. 5 To Show the distribution according to thinai

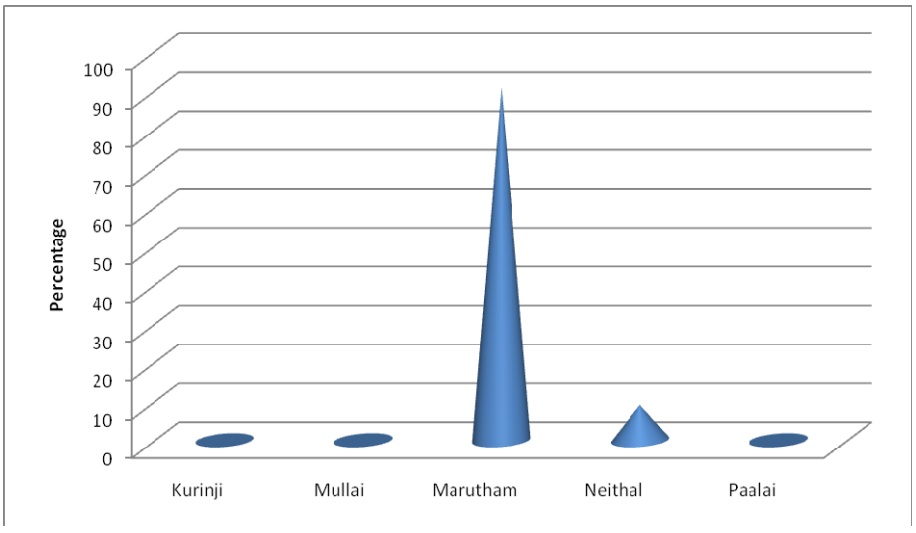


Table – 8. Diet

i. Food habit:

S.no	Food habit	No.of cases	Percentage
1.	Vegetarian	14	63.6%
2.	Mixed	8	36.4%

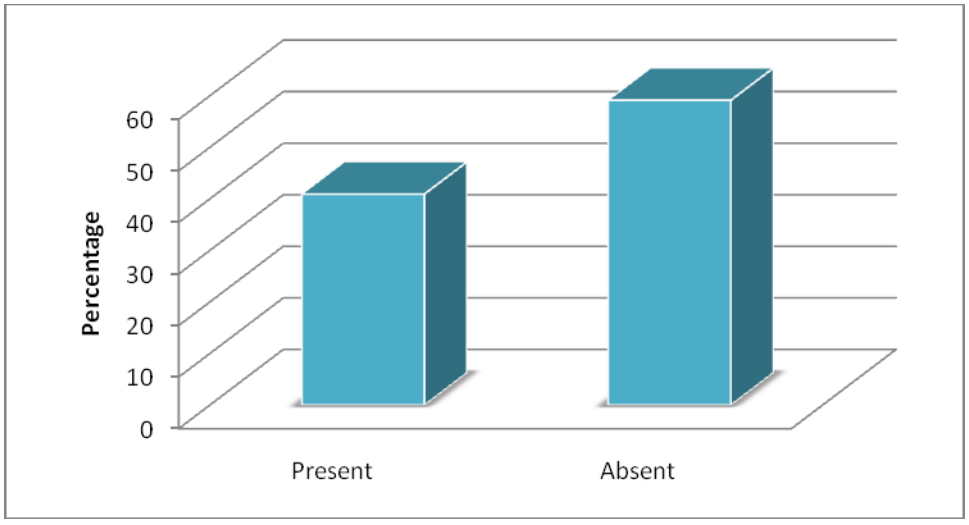
Out of 22 cases, 63.6% were vegetarian and remaining 36.4% were mixed diet.For this table ($p > 0.1$).

ii. Breast feeding:

S.no	Breast feeding	No.of cases	Percentage
1.	Present	9	40.9%
2.	Absent	13	59.1%

Among 22 cases**,** 40.9% of the cases were breast fed.For this table ($p > 0.1$)

Fig. 6 To show the distribution on the basis of breast fed during early childhood



iii. Dietry chart:

S.no	Consumed food cal/protein/day	No.of cases	Percentage
1.	Normal	5	22.7%
2.	Below normal	17	77.3% ($p < 0.02$)

Out of 22 cases, 77.3% consume calories and proteins less than normal RDA.

Fig – 7 To show the distribution on the basis of dietary chart

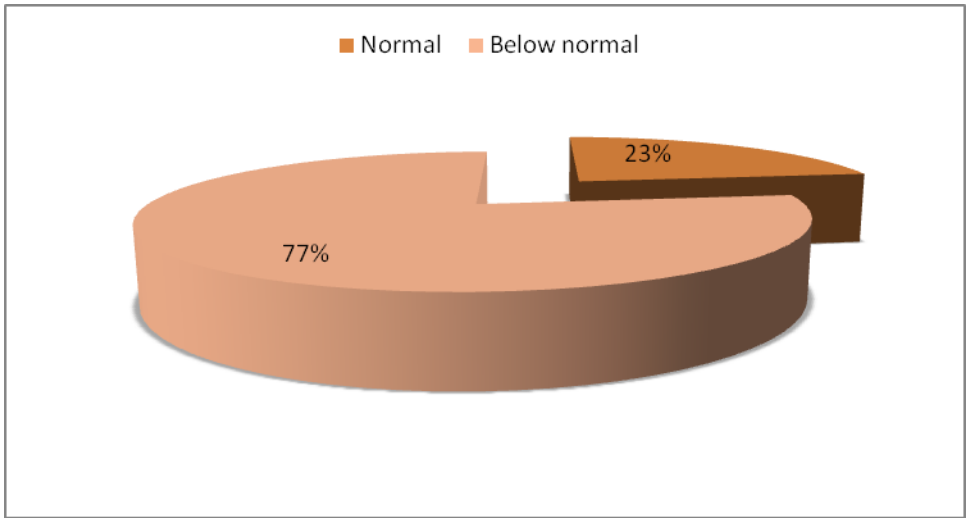


Table to calculate the caloric & protein requirement

S.no	Age (years)	Calories kcal/day	Proteins gm/kg/day
1.	0 – 1	100 -110	2.5
2.	1 -3	100	2 – 2.5
3.	4 – 6	80 – 90	1.75 – 2
4.	7 – 9	70 – 80	1.75- 2.
5.	10 – 12	60 – 70	1.25

Diet Chart for IP Patients

S.No.	IP No	Age (Yrs.)	Weight {kgs.}	R D A		Consumed Food (approx.)		Remarks
				Calories Kcal/day	Protein gm/kg/day.	Calories Kcal/day	Protein gm/kg/day	
1	2825	21/2	10	1100	2 – 2.5	1050	1.9	Below normal
2	2819	3	15	1200	2 – 2.5	1200	2.5	Normal
3	2821	3	12	1200	2 – 2.5	1100	1.8	Below normal
4	2823	3	11	1200	2 – 2.5	1000	2.0	Below normal
5	9	10	21	1900	1.25	2000	1.3	Normal
6	10	2	9	1100	2 – 2.5	1000	1.9	Below normal

7	75	10	26	1900	1.25	1800	1.0	Below normal
8	78	11	27	2000	1.25	1850	1.1	Below normal
9	79	10	28	1900	1.25	1750	1.0	Below normal
10	80	10	26	1900	1.25	1850	1.1	Below normal
11	86	2	10	1100	2 – 2.5	1050	1.7	Below normal
12	102	9	24	1800	1.75 – 2	1700	1.3	Below normal
13	103	4	13	1300	1.75 – 2	1200	1.6	Below normal
14	108	10	26.5	1900	1.25	1750	1.0	Below normal
15	109	10	25.5	1900	1.25	1900	1.25	Normal
16	110	9	25	1800	1.75 – 2	1600	1.5	Below normal
17	256	2	11	1100	2 – 2.5	950	1.7	Below normal
18	262	3	13	1200	2—2.5	1150	1.9	Below normal

19	306	3	12	1200	2 – 2.5	1100	1.8	Below normal
20	496	3	12	1200	2 – 2.5	1250	2.6	Normal
21	875	2	9	1100	2 – 2.5	1000	1.8	Below normal
22	1199	3	14	1200	2 – 2.5	1300	2.5	Normal

RDA = Recommended daily allowance.

Normal means patient consuming adequate RDA

Below normal means patient consuming less than normal RDA

$P < 0.01$ statistically significant less calories

Table – 9. Social and environmental factors

i. Parent's occupation

S.no	Grade	Occupation	No.of cases	Percentage
1.	Class-I	Executives	-	-
2.	Class-II	Professional	-	-
3.	Class-III	Trained workers	4	18.2%
4.	Class-IV	Un Trained workers	18	81.8% ($p < 0.01$)

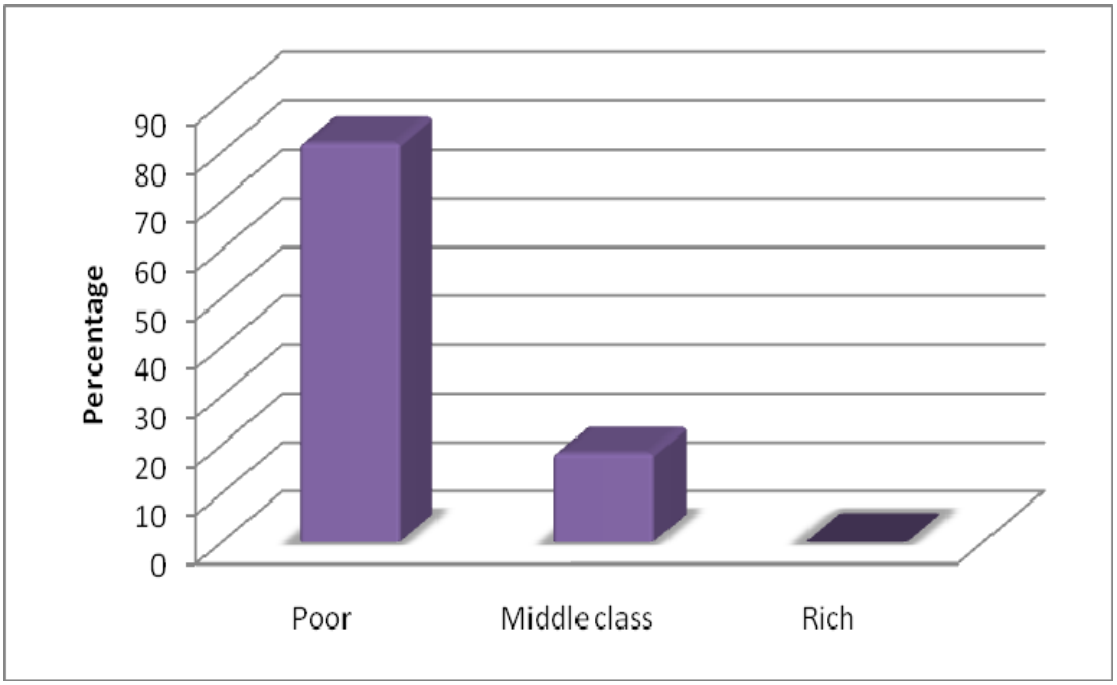
Out of 22 cases, 81.8%of cases were children of untrained workers.

ii. Socio-economic status:

S.No	Socio-economic status	No. of cases (out of 22)	Percentage
1	Poor	18	81.8% ($p < 0.01$)
2	Middle class	4	18.2%
3	Rich	-	-

According to this study 18 cases belongs to Poor socio economic status and 4 belongs to Middle class.

Fig. 8 To show the distribution on the basis of socio economic status



iii. Water sources

S.NO	Water sources	No.of cases	Percentage
1.	Well	5	22.7%
2.	Tap water	5	22.7%
3.	Borewel	-	-
4.	Pond/River	12	54.5%

Out of 22 cases, 54.5% of the cases were consuming contaminated water.

Table-10. Anthropometric report of IP cases

S.No.	IP No.	Age In years	Expected weight (kgs)	Actual weight (kgs)	Height (cms)	Head Cir. (cms)	Midarm Cir. (cms)
1	2825	21/2	13	10	90	46	12.5
2	2819	3	15	15	93	47	14.5
3	2821	3	15	12	88	46	13
4	2823	3	15	11	89	47	13.5
5	9	10	30	21	134	50	-
6	10	2	12	9	81	40	12.5
7	75	10	30	24	130	51	-
8	78	11	33	27	133	50	-
9	79	10	30	28	132	51	-

10	80	10	30	26	136	51	-
11	86	2	12	10	80	41	13
12	102	9	25	24	128	51	-
13	103	4	16	13	100	41	14
14	108	10	30	26.5	128	52	-
15	109	10	30	25.5	130	50	-
16	110	9	25	25	126	49	-
17	256	2	12	11	80	40	12.5
18	262	3	15	13	90	39	14.5
19	306	3	15	12	86	41	13
20	496	3	15	12	92	40	13.5
21	875	2	12	9	84	38	12.5
22	1199	3	15	14	90	47	14.5

$P > 0.1$ (The change between the expected body weight and actual body weight is not statistically significant)

Table-11. Nutritional status (Gomez scale)

S.no	Weight for age %	No.of cases	Percentage
1.	>80%	5	22.7%
2.	71-80%	17	77.3% ($p < 0.02$)
3.	61-70%	-	-
4.	51-60%	-	-
5.	<50%	-	-

Out of 22 cases, 77.3% cases were grade I malnutrition,others are normal according to Gomez scale of malnutrition.

Fig. 9 To show the distribution on the basis of nutritional status

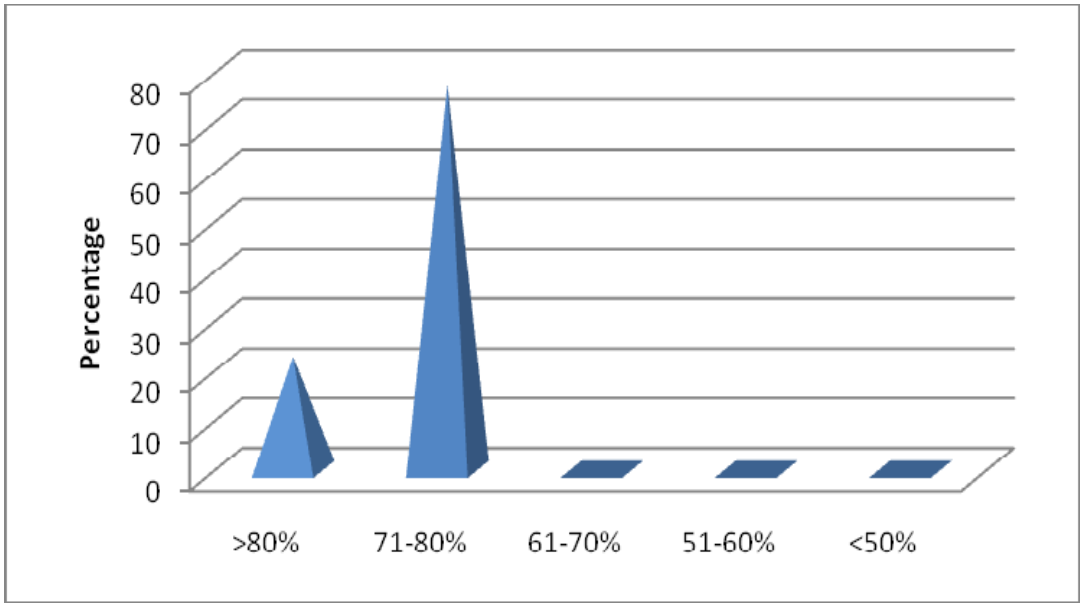


Table – 12. Aetiological factors

S.No	Aetiological factors	No. of cases (out of 22)	Percentage
1	Drinking contaminated water	12	54.5%
2	Socio economic depriviation of mother	18	81.8% ($p < 0.05$)
3	Improper diet and healthcare	17	77.3% ($p > 0.05$)

Fig.10 To show the distribution on the basis of aetiological factors

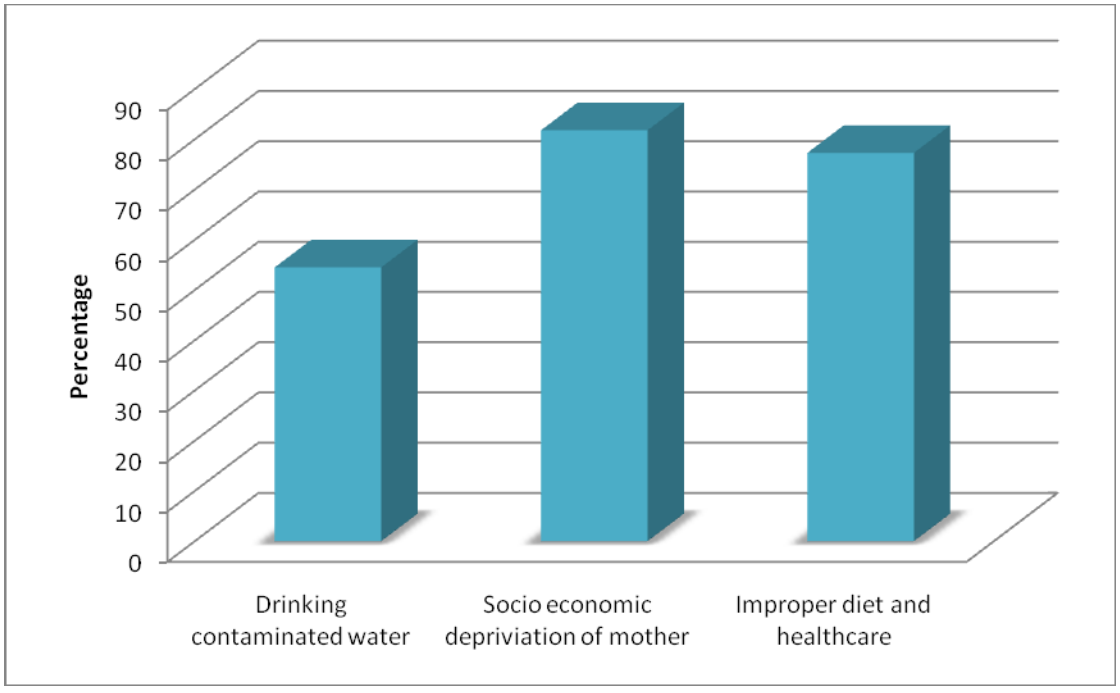


Table-13 Clinical features

S.no	Signs and symptoms	No.of cases (out of 22 cases)	Percentage
1	Pallor	20	90.9%
2	Dyspnoea on exertion	14	63.6%
3	Loss of appetite	22	100%
4	Bone deformity	3	13.6%
5	Emaciation	16	72.7%
6	Insomnia	8	36.4%
7	Ulceration of mouth & tongue	15	68.2%
8	Redness of tongue	8	36.4%
9	Fever	20	90.9%
10	Fever with chills	15	68.2%
11	Diarrhoea	22	100%
12	Nausea & vomiting	10	45.5%
13	Abdominal pain	5	22.7%
14	Other complaints	-	-

Fig.11 To show the signs & symptoms

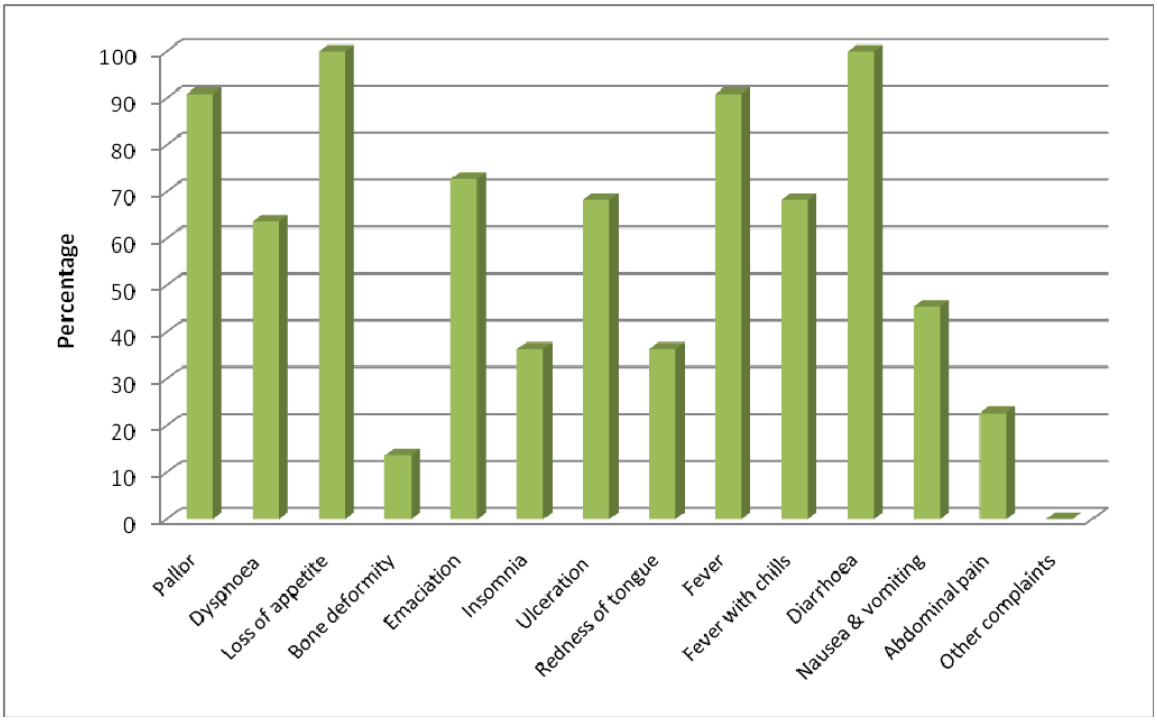


Table-14.Uyir Thathukkal

i. Derangement of vatham

S.No	Types of Vatham	No. of cases (out of 22)	Percentage
1	Pranan	-	-
2	Abanan	22	100%
3	Viyanan	22	100%
4	Uthanan	20	90.9%
5	Samanan	22	100%
6	Naagan	-	-
7	Koorman	-	-
8	Kirukaran	22	100%
9	Devathathan	-	-
10	Dhananjeyan	-	-

Due to the derangement of different vatham the following symptoms occur, Abanan causes diarrhoea, Viyanan causes emaciation, Samanan causes loss of appetite and Uthanan causes vomiting.

ii. Derangement of pitham

S.No	Types of Pitham	No. of cases (out of 22)	Percentage
1	Analam	22	100%
2	Ranjagam	22	100%
3	Saathagam	20	90.9%
4	Pirasagam	20	90.9%
5	Aalosagam	-	-

Due to the derangement of pitham the following symptoms occur. Analam causes loss of appetite, Ranjagam causes malnutrition, Saathagam causes fatigue and malaise, Pirasagam causes paleness of skin.

iii. Derangement of kabam

S.No	Types of Kabam	No. of cases (out of 22)	Percentage
1	Avalambagam	-	-
2	Kilethagam	22	100%
3	Pothagam	20	90.9%
4	Tharpagam	-	-
5	Santhigam	-	-

Due to the derangement of kabam the following symptoms occur. Kilethagam causes loss of appetite, Pothagam causes loss of taste.

Table15. Udal thathukkal

S.No	Udal thathukkal	No. of cases (out of 22)	Percentage
1	Saaram	22	100%
2	Senneer	22	100%
3	Oon	22	100%
4	Kozhuppu	22	100%-
5	Enbu	5	22.7%
6	Moolai	5	22.7%
7	Sukkilam / Suronitham	-	-

In Ezhu udal kattukal, Saram affected due to diarrhoea and anorexia. Senneer, Oon & Kozhuppu are affected due to malnutrition.Moolai affected due to bone deformity.

Table – 16. Ennvagai thervugal

S.No	Ennvagai thervugal	No. of cases (out of 22)	Percentage
1	Naadi	22	100%
2	Sparisam	18	81.8%
3	Naa	18	81.8%
4	Niram	15	68.2%
5	Mozhi	3	13.6%
6	Vizhi	5	22.7%
7	Malam	22	100%
8	Moothiram	5	22.7%

In ennvagai thervugal, the observation of Naadi indicates the derangement of Thrithodam.Dehydration, fever, feeling hot and abdominal pain were observed by Sparisam. Pale appearance and dryness of Naa indicates malnutrition and dehydration. From Niram we observe the temperature of body and malnutrition.Paleness of sclera indicates anaemia. From Vizhi we observe malaise and dullness of body and Malam is observed if diarrhoea is present.

Table – 17. Neikuri

S.No	Neikuri	Characters of Urine	No. of cases (out of 22)	Percentage
1	Vatha Neer	Spreads like Snake	12	54.5% ($p > 0.1$)
2	Pitha Neer	Spreads like Ring	10	45.5% ($p > 0.1$)
3	Kaba Neer	Stands like Pearl	-	-

Table 18 IP Case sheet report

S. No	I.P. No	Name	Age	Sex	DOA	Complaints	DOD	No. of days treated	Results
1	2825	Sudha	2 1/2	F	16.11.07	Diarrhoea, Ulceration of mouth, Fever, Loss of appetite	17.11.07	2	Poor
2	2819	Malathi	3	F	16.11.07	Fever, Ulceration of mouth, Fatigue, Dyspnoea on exertion.	17.11.07	2	Poor
3	2821	Meena	3	F	16.11.07	Diarrhoea, Loss of appetite, Fatigue, Lassitude.	20.11.07	5	Good
4	2823	Ruban	3	M	16.11.07	Diarrhoea, Palapitation, Fatigue, Ulceration of mouth and tongue.	20.11.07	5	Good
5	9	Amutha	10	F	03.01.08	Fever, Ulceration of mouth, Loss of appetite, Easy fatigue.	06.01.08	4	Fair
6	10	Manikandan	2	M	03.01.08	Vomiting, Ulceration of mouth, Fever, Loss of appetite	07.01.08	5	Good
7	75	Vino	10	M	11.01.08	Diarrhoea, Dyspnoea on exertion, Loss of appetite, Fever.	14.01.08	4	Fair
8	78	Palani Raj	11	M	12.01.08	Fever, Ulceration of mouth and tongue, Pallor.	16.01.08	5	Good
9	79	Prabhu	10	M	12.01.08	Abdominal pain, Vomiting, Diarrhoea, Loss of appetite.	16.01.08	5	Good
10	80	Nainar	10	M	12.01.08	Diarrhoea, Ulceration of mouth, Loss of appetite, Fever.	16.01.08	5	Good
11	86	Ranjit	2	M	12.01.08	Vomiting, Fever, Indigeston, Loss of appetite, Diarrhoea.	21.01.08	10	Good

12	102	Marimuthu	9	M	15.01.08	Redness of tongue, Ulceration of mouth, Loss of appetite, Easy fatigue.	20.01.08	6	Good
13	103	Visal	4	M	15.01.08	Indigestion, Pallor, Abdominal pain, Loss of appetite, Fever.	19.01.08	5	Good
14	108	Murali	10	M	16.01.08	Fever, Ulceration of mouth, Loss of appetite, Easy fatigue.	21.01.08	6	Good
15	109	Sathish Kumar	10	M	16.01.08	Vomiting, Pallor, Loss of appetite, Ulceration of tongue.	21.01.08	6	Good
16	110	Karthik	9	M	16.01.08	Abdominal pain, Ulceration of mouth, Nausea, Vomiting, Fever.	21.01.08	6	Good
17	256	Vijayakumar	2	M	30.01.08	Vomiting and diarrhoea, Loss of appetite.	03.02.08	4	Fair
18	262	Subaitha	3	F	30.01.08	Fever, Loss of appetite, Diarrhoea, Easy fatigue.	07.02.08	8	Good
19	306	Karthik Raja	3	M	02.02.08	Abdominal pain, Nausea and Vomiting	06.02.08	5	Good
20	496	Chitra	3	F	19.02.08	Fever, Ulceration of mouth, Easy fatigue, Diarrhoea.	27.02.08	9	Good
21	875	Mahalakshmi	2	F	05.04.08	Diarrhoea, Vomiting, Loss of appetite.	11.04.08	7	Good
22	1199	Dinesh	3	M	13.05.08	Abdominal pain, Redness of tongue, Loss of appetite, Indigestion, Diarrhoea.	31.05.08	19	Fair

DOA - Date of Admission
DOD - Date of Discharge.
Among 22 cases treated, 63.6% of the cases showed good results; 27.3% showed fair results & 9.1% of the cases showed poor results.

Table-19.Blood report

S.no	Haemoglobin content %	No of cases (out of 22 cases)	Percentage
1	Upto 55	2	9.1%
2	55 – 60	4	18.2%
3	60 – 65	8	36.4%
4	65 – 70	6	27.3%
5	Above 70	2	9.1%

For this table ($p > 0.05$)

Fig. 12 To show the distribution on the basis of Hb content

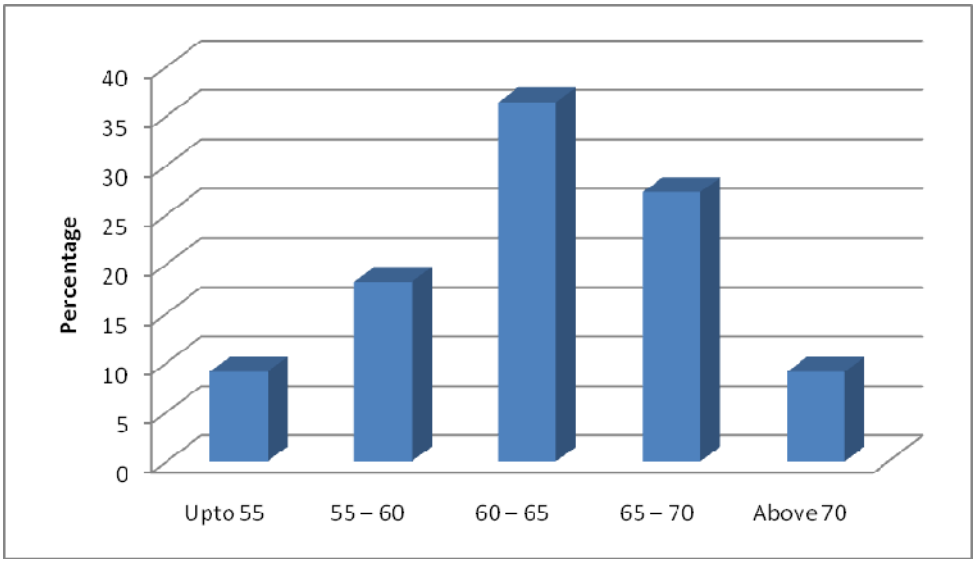


Table-19(i). Haematological report

S. No	I.P. No	Name	Age	Sex	Before Treatment						After Treatment						DOA	DOD	No. of days treated
					TC/Cu mm	DC			Hb%	ESR mm/hr	TC/Cu mm	DC			Hb%	ESR mm/hr			
						P%	L%	E%				P%	L%	E%					
1	2825	Sudha	2 1/2	F	7000	62	35	3	60	20	7000	62	36	2	62	18	16.11.07	17.11.07	2
2	2819	Malathi	3	F	7100	60	37	3	71	14	7100	60	38	2	72	12	16.11.07	17.11.07	2
3	2821	Meena	3	F	8000	60	34	6	65	7	8000	60	34	4	66	6	16.11.07	20.11.07	5
4	2823	Ruban	3	M	7100	53	45	2	64	10	7100	53	45	2	67	8	16.11.07	20.11.07	5
5	9	Amutha	10	F	8000	60	30	10	71	0.7	8000	60	34	6	71	5	03.01.08	06.01.08	4
6	10	Manikandan	2	M	6900	56	42	2	59	20	6900	58	40	2	60	15	03.01.08	07.01.08	5
7	75	Vino	10	M	9100	60	38	2	70	10	9100	60	38	2	72	8	11.01.08	14.01.08	4
8	78	Palani Raj	11	M	10000	62	28	10	64	15	10000	62	30	8	66	12	12.01.08	16.01.08	5
9	79	Prabhu	10	M	9200	60	28	12	55	5	9000	60	34	6	56	5	12.01.08	16.01.08	5
10	80	Nainar	10	M	10000	60	35	5	68	6	10000	60	36	4	70	4	12.01.08	16.01.08	5
11	86	Ranjit	2	M	7100	52	46	2	69	7	7100	52	46	2	70	5	12.01.08	21.01.08	10

12	102	Marimuthu	9	M	9100	62	34	4	64	15	9100	62	36	2	66	12	15.01.08	20.01.08	6
13	103	Visal	4	M	7200	54	40	6	58	10	7200	54	42	4	60	8	15.01.08	19.01.08	5
14	108	Murali	10	M	9200	60	35	5	65	30	9200	62	35	3	67	26	16.01.08	21.01.08	6
15	109	Sathish Kumar	10	M	9300	60	32	8	70	30	9300	60	32	8	71	28	16.01.08	21.01.08	6
16	110	Karthik	9	M	8000	60	28	12	64	40	8000	62	32	6	65	34	16.01.08	21.01.08	6
17	256	Vijayakumar	2	M	9100	60	32	8	70	12	7100	60	36	4	72	10	30.01.08	03.02.08	4
18	262	Subaitha	3	F	8800	56	40	4	65	15	8800	53	40	4	67	14	30.01.08	07.02.08	8
19	306	Karthik Raja	3	M	7000	62	35	3	65	24	7000	62	35	3	66	20	02.02.08	06.02.08	5
20	496	Chitra	3	F	8800	60	34	6	68	16	8800	60	36	4	70	14	19.02.08	27.02.08	9
21	875	Mahalakshmi	2	F	7000	58	36	6	55	10	7000	58	38	4	58	8	05.04.08	11.04.08	7
22	1199	Dinesh	3	M	7200	54	40	6	56	10	7400	56	40	4	58	10	13.05.08	31.05.08	19

TC - Total Count DC - Differential Count
Hb - Haemoglobin Level ESR - Erythrocyte Sedimentation Rate

Table-19(ii). Urine and motion analysis

S.No	IP No	Urine Analysis						Motion Analysis			
		Before Treatment			After Treatement			Before Treatment		After Treatment	
		Alb	Sug	Dep	Alb	Sug	Dep	Ova, Cyst	Occ.Blood	Ova, Cyst	Occ.Blood
1	2825	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2	2819	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
3	2821	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
4	2823	Nil	Nil	3 PC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
5	9	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
6	10	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
7	75	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8	78	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
9	79	Nil	Nil	2 PC	Nil	Nil	Nil	Nil	Nil	Nil	Nil

10	80	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
11	86	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
12	102	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
13	103	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14	108	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
15	109	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
16	110	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
17	256	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
18	262	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
19	306	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
20	496	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
21	875	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
22	1199	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Table – 20. Prognosis assessment of signs & symptoms

S. No	Signs and symptoms	Present during admission (No of case)	Present during discharge (No of case)	After 1 month follow-up (No of case)	Percentage of Improvement in signs & symptoms
1	Pallor	20	6	3	85%*
2.	Dyspnoea on exertion	14	9	3	78.6%*
3.	Loss of appetite	22	3	-	100%*
4.	Bone deformity	3	3	3	0 %
5.	Emaciation	16	6	3	81.3%*
6.	Insomnia	8	4	2	75%*
7.	Ulceration of mouth and tongue	15	5	3	80%*
8.	Redness of tongue	8	2	-	100%*
9.	Fever	20	-	-	100%*
10.	Fever with chills	5	-	-	100%*
11.	Diarrhoea	22	5	-	100%*
12.	Nausea & vomiting	10	2	-	100%*
13.	Abdominal pain	5	2	-	100%*
14.	Other complaints	-	-	-	-

* $\chi 2$ $p < 0.01$

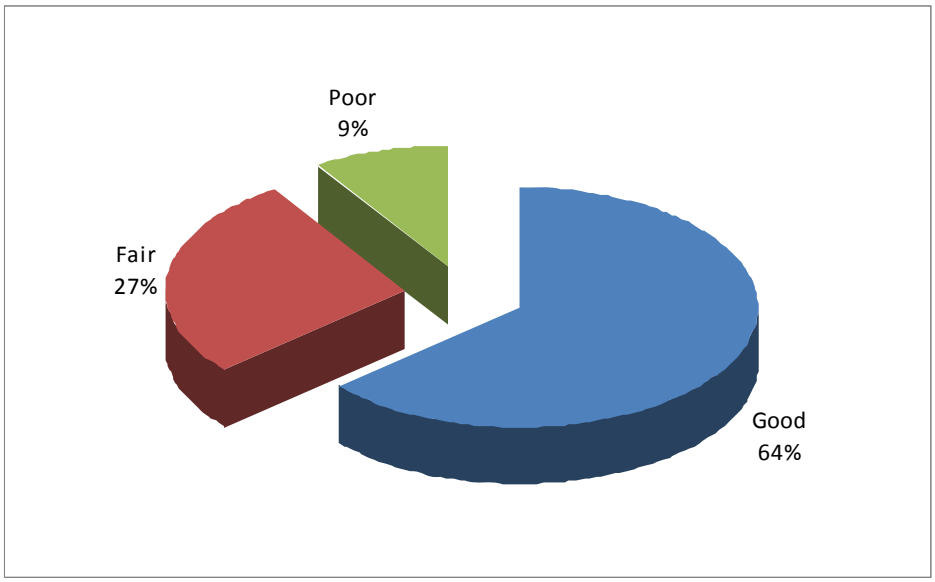
Table-21. Remarks

Among 22 cases the results were observed as follows.

S.No	Remarks	No. of cases (out of 22)	Percentage
1.	Good	14	63.6% ($p < 0.02$)
2.	Fair	6	27.3%
3.	Poor	2	9.1%

Among 22 cases, 63.6% cases showed significant improvement.Because their signs & symptoms were reduced markedly, they come under good response group.27.3% cases showed moderate improvement, they come under fair response group. Remaining 9.1% cases comes under poor response group.

Fig.13 To show the distribution on the basis of efficacy of the trial medicine Omathy Urundai



Results

Results were observed on the basis of improvement of clinical symptoms and the results derived from the anthropometry measurements.

After discharge the patients were advised to attend the post graduate kuzhanthai maruthuvam out-patient ward for further follow-up.During and after treatment nutritional diet and personal hygiene is advised.

Table-22.O.P.Case report

OUTPATIENT CASE REPORT FOR AKKARA MANTHAM				
S.no	**Name**	**Age/Sex**	**No of days treated**	**Prognosis**
1	Jebin	5/MC	22	GOOD
2	Sundar	2/MC	20	GOOD
3	Lakshmi Geetha	10/12FC	15	FAIR
4	Petchiammal	1/FC	23	GOOD
5	Ravi Kumar	3/MC	18	FAIR
6	Kani Mozhi	3/FC	18	GOOD
7	Elango	2 ½ MC	19	GOOD
8	Saranya	2/FC	22	GOOD
9	Siva	5/MC	20	GOOD
10	Revathy	7/FC	25	GOOD
11	Naveen	9/12 FC	20	GOOD
12	Saravanan	2/MC	22	GOOD
13	Anand	7/MC	25	GOOD
14	Sankaravadivu	6/FC	20	FAIR
15	Vasanth	2 ½ /MC	30	GOOD
16	Fathima	4/FC	25	GOOD
17	Lalitha	10/FC	25	FAIR
18	Rani	9/FC	25	GOOD
19	Gayathri	3 ½ /FC	20	GOOD
20	Saran Vishnu	6/12 MC	15	FAIR
21	Bala Kumaran	7/MC	12	POOR
22	Shankar	5/MC	22	GOOD
23	Victor	2/MC	30	GOOD
24	Shankar Sriram	10/12 MC	30	GOOD
25	Ravi	3/MC	25	GOOD
26	Shanmuga Priya	2 ½ FC	28	GOOD
27	Gowtham	3/MC	20	FAIR
28	Priya	3/FC	15	FAIR
29	Maheswari	2 ½ FC	35	GOOD
30	Mariammal	3/FC	20	GOOD
31	Robert	3/MC	30	GOOD

32	Sakthi Yashoda	3/FC	15	POOR
33	Sakunthala	2/FC	24	GOOD
34	Lakshmi Devi	3/FC	20	GOOD
35	Isakiammal	1/FC	22	GOOD
36	Manimegalai	2FC	20	GOOD
37	Sudha	2 ½ FC	18	FAIR
38	Malathi	3/FC	30	GOOD
39	Meena	3/FC	35	GOOD
40	Ruban	3/MC	24	GOOD
41	Amutha	10/FC	20	FAIR
42	Manikandan	2/MC	19	FAIR
43	Vino	10/MC	30	GOOD
44	Palani Raj	11/MC	28	GOOD
45	Prabha	10/FC	30	GOOD
46	Nainaar	10/MC	30	GOOD
47	Ranjit	2/MC	20	FAIR
48	Marimuthu	9/MC	21	GOOD
49	Visal	4/MC	15	FAIR
50	Sathish kumar	10/MC	22	GOOD
51	Karthik	9/MC	20	FAIR
52	Vijaya kumar	2/MC	18	FAIR
53	Subaitha	3/FC	30	GOOD
54	Karthik Raja	3/FC	18	FAIR
55	Chitra	3/FC	20	POOR
56	Mahalakshmi	2/FC	28	GOOD
57	Dinesh	3/MC	32	GOOD
58	Murali	10/MC	40	GOOD
59	Mohamed	8/MC	20	GOOD
60	Johnson	5/MC	18	FAIR
61	Shinny	1/FC	32	GOOD
62	Jaya kumar	3/MC	30	FAIR
63	Vanitha	2 ½FC	22	GOOD
64	Jennisa	1/FC	28	FAIR
65	Mano	4/MC	34	GOOD
66	Bala	3½FC	20	GOOD

67	Maharasi	3/FC	22	FAIR
68	Parvathi	2 ½FC	24	GOOD
69	Swathi	6/FC	40	FAIR
70	Arokya Swamy	5/MC	35	GOOD
71	Vimala	4/FC	20	FAIR
72	Amudhashanthi	5/FC	26	GOOD
73	Anu Radha	4/FC	19	GOOD
74	Jeya Lakshmi	1/FC	28	FAIR
75	Raman	4/MC	30	GOOD
76	Ravendren	3/MC	19	GOOD
77	Gowri	2/FC	20	GOOD
78	Sreedevi	3/FC	21	GOOD

Among 78 cases treated, 53 cases showed good response. 22 cases showed fair response and 3 cases showed poor response.

DISCUSSION

AKKARA MANTHAM is a common disease among children.It occurs due to faulty food habits of the mother during conception and the child after birth.The three humours namely vatham, Pitham and Kapham are affected in this disease.The signs and symptoms of AKKARA MANTHAM more or less correlates with malnutrition.The affected thiridoshas are brought to normal by the trial medicine OMATHY URUNDAI.

Case report

According to the signs and symptoms mentioned in siddha literature, 100 cases were selected for treatment.Patients were treated both as in-patients and out-patients in post graduate IV Kuzhanthai Maruthuvam department.Out of hundred cases 22 cases were admitted in the in-patient ward, the other cases were treated in out-patient ward.

Out of 22 cases admitted in in-patient ward,

- 12 cases were under the age of 1-3 years, 1 case was under 3-6 years, 8 cases were under 6-11 years and 1 case was under the age 11-12 years.
- 15 cases were males and 7 cases were females.
- 13 cases were Hindus, 4 cases were Muslims and 5 cases were Christians.
- 15 cases have good reliability, 3 cases have fair reliability, 2 cases have poor reliability and 2 cases have no reliability.

- 4 cases were admitted in koothir kaalam, 12 cases were in munpani kaalam, 4 cases in pinpani kaalam and 2 cases in elavenil kaalam.
- 20 cases belong to marutha nilam and 2 cases belong to neithal nilam.
- 14 cases were vegetarian and 8 cases have mixed diet habit.
- 5 cases have normal consumption of calories and proteins, in 17 cases consumption is below normal.
- 9 cases were breast fed and 13 cases were not breast fed.
- 4 cases belong to trained worker parents and 18 cases belong to untrained worker parents.
- The socio economic status of 18 cases were poor and that of 4 cases were middle class.
- Nutritional status of 17 cases is between 71-80 %.
- In all cases Abanan, Viyanan, Samanan and Kirukaran is affected and Uthanan is affected in 20 cases.
- In all cases Analam, Ranjagam is affected.Saathagam and Pirasagam is affected in 20 cases.
- Kilethagam is affected in 22 cases, Pothagam is affected in 20 cases.
- Saram, Senneer, Oon, Kozhuppu is affected in all the 22 cases, Enbu and Moolai is affected in 5 cases.
- Naadi affected in all 22 cases, Sparism and Naa affected in 18 cases, Niram in 15 cases, Malam in 12 cases, Moothiram and Vizhi in 5 cases and Mozhi in 3 cases.
- 12 cases have Vatha neer and 10 cases have Pitha neer.

- ❖ 14 cases have good prognosis, 6 cases have fair prognosis and 2 cases have poor prognosis.

Treatment

The trial medicine selected for this study is very effective because the action mentioned in each drugs which are used in this medicine contain Carminative, Stomachic, Stimulant, Haematinic, Tonic, Antispasmodic, Anodyne, Coolent, Emollient actions which are beneficial for this disease.The pothu gunam for every drugs told by the siddhars is also beneficial.

OMATHY URUNDAI reduces Fever, Diarrhoea, Vomiting, Loss of appetite, Help in increasing body weight, Increases digestive and absorption function and Decreases mouth ulcer.

Biochemical analysis

Biochemical analysis of the trial drug OMATHY URUNDAI shows the presence of following substances, they are Chloride, Ferrous Iron, Phosphate, Unsaturated compounds and Amino acid.

Chloride

In diarrhoea and vomiting there is loss of chloride from the body.Now a days for diarrhoea and vomiting oral rehydration salt is given, which contain sodium chloride.Since the trial drug contain chloride it is very useful in treating Akkara mantham.

Ferrous Iron

Iron in the food is absorped from the intestine in ferrous form.Iron helps in increasing the haemoglobin level of blood.

Phosphate

Phosphate is necessary for the formation of high energy bond compounds like ATP, ADP and creatine phosphate.Phosphate is also necessary for the formation of bones and teeths.

Unsaturated compounds

The presence of unsaturated compounds in trial medicine helps in easy absorption.

Amino acid

Amino acids are the simplest unit of a protein molecule and they form the building block of protein structure.Protein is the major energy yielding nutrient.

Pharmacological analysis

The trial medicine OMATHY URUNDAI has the following actions,

Antiulcer action	-	Significant
Antipyretic action	-	Moderate
Antidiarrhoeal action	-	Moderate

From the above discussion it is clear that the trial medicine "OMATHY URUNDAI" will be useful in the treatment of the disease "AKKARA MANTHAM".

SUMMARY

1. The study on AKKARA MANTHAM is done to find out a complete relief to those who are affected with a simple herbal medicine – OMATHY URUNDAI.
2. Literary evidence relevant to AKKARA MANTHAM were collected from both modern and siddha literature.
3. The clinical features of AKKARA MANTHAM is correlated with the clinical features of malnutrition.
4. Complicated cases those who need emergency treatment were excluded for this study.
5. Siddha diagnostic methods and modern diagnostic methods are carried out in all cases and recorded.
6. The trial medicine OMATHY URUNDAI was given internally 1 pill, three times a day before meals with hot water.The dose of the medicine was adjusted according to the age, weight and severity of the disease.No side effect was reported during treatment.
7. The biochemical analysis of the trial medicine shows the presence of Chloride, Ferrous Iron, Phosphate, Unsaturated compounds and Amino acids.
8. The pharmacological analysis of the trial medicine shows significant antiulcer action and moderate antipyretic and antidiarrhoeal action.

CONCLUSION

AKKARA MANTHAM cases are treated both as in-patients and out- patients with the trial medicine OMATHY URUNDAI 1 pill, three times a day with hot water.63.6% of the patients showed good results.

From the in-patient and out-patient follow-up reports, the trial medicine is effective in the disease AKKARA MANTHAM. Raw drugs used in the medicine are easily available everywhere, safe, economic and are used daily in our food. So it has no side effects. The actions mentioned in each drugs are also beneficial to treat this disease.

Pathologically affected patients may be restored to normal physiological life by means of this drug. But the restored life is maintained only when the patients are under nutritional diet and personal hygiene.

ANNEXURES

BIO - CHEMICAL ANALYSIS OF OMATHY URUNDAI

PREPARATION OF THE EXTRACT

5gms of Omathy Urundai powder was weighed accurately and placed in a 250ml clean beaker. Then 50ml distilled water was added and dissolved well. Then it was boiled well for about 10 minutes. It was cooled and filtered in a 100ml volumetric flask and then it is made up to 100ml with distilled water. This fluid was taken for analysis.

QUALITATIVE ANALYSIS

S.NO	EXPERIMENT	OBSERVATION	INFERENCE
1.	**TEST FOR CALCIUM** 2ml of the above prepared extract is taken in a clean test tube. 2 ml of 4% Ammonium oxalate solution is added to it.	No white precipitate is formed.	Absence of Calcium.
2.	**TEST FOR SULPHATE** 2ml of the extract is added to 5% Barium chloride solution.	No white precipitate is formed.	Absence of Sulphate.
3.	**TEST FOR CHLORIDE** The extract is treated with Silver nitrate solution.	A white precipitate is formed.	Indicates the presence of Chloride.

4.	**TEST FOR CARBONATE** The substance is treated with Concentrated HCL.	No brisk effervescence is formed.	Absence Of Carbonate.
5.	**TEST FOR STARCH** The extract is added with weak Iodine solution.	No blue colour is formed.	Absence of Starch.
6.	**TEST FOR IRON FERRIC** The extract is treated with Glacial acetic acid and Potassium ferro cyanide.	No blue colour is formed.	Absence of Ferric Iron.
7.	**TEST OF IRON FERROUS** The extract is treated with Concentrated Nitric acid and Ammonium thio cynate.	Blood red colour is formed.	Indicates the presence of Ferrous Iron.
8.	**TEST FOR PHOSPHATE** The extract is treated with Ammonium Molybdate and Concentrated nitric acid.	Yellow precipitate is formed.	Indicates the presence of Phosphate.
9.	**TEST FOR ALBUMIN** The extract is treated with Esbach's reagent.	No yellow precipitate is formed .	Absence of Albumin.

10.	**TEST FOR TANNIC ACID** The extract is treated with Ferric chloride.	No Blue black precipitate is formed.	Absence of Tannic Acid.
11.	**TEST FOR UNSATURATION** Potassium permanganate solution is added to the extract.	It gets decolourised.	Indicates the presence of Unsaturated Compound.
12.	**TEST FOR THE REDUCING SUGAR** 5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 mts and add 8-10 drops of the extract and again boil it for 2 mts.	No colour change occurs	Absence of Reducing Sugar
13.	**TEST FOR AMINO ACID:** One or two drops of the extract is placed on a filter paper and dried well. After drying, 1% Ninhydrin is sprayed over the same and dried well.	Violet colour is formed.	Indicates the presence of Amino Acid

Inference

The above analysis indicates the presence of Chloride, Ferrous iron, Phosphate, Unsaturated compounds and Amino acid.

PHARMACOLOGICAL ANALYSIS

ANTIPYRETIC STUDY OF OMATHY URUNDAI

(By yeast induced method)

Aim

To study the anti pyretic activity of Omathy Urundai

Procedure

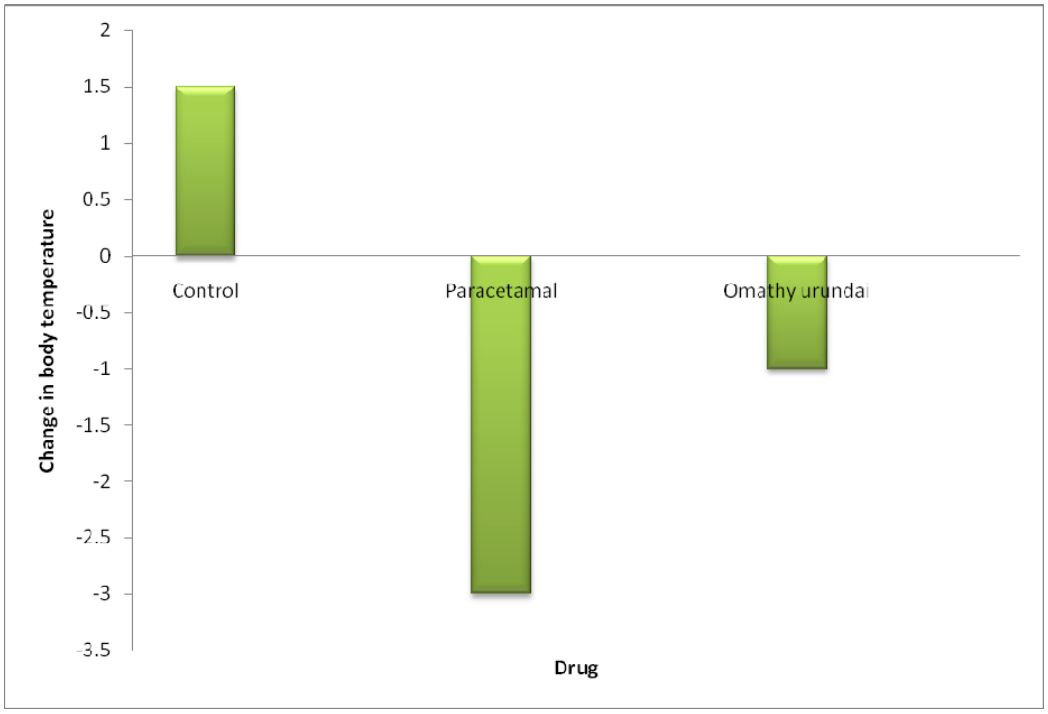
A group of six albino rats were selected and divided equally into 3 groups. All the rats were made hyperthermic by subcutaneous injection of 12% suspension of yeast at a dose of 1 ml / 100 gm of body weight. 10 hours later one group of animals were given the test drug by gastric tube at a dose of 250 mg / 1 ml and the second group received only distilled water at a dose of 2 ml. Third group received standard drug paracetomol 20 mg / 1ml. Then the mean rectal temperature for the 3 groups were recorded at 0 hour, 1 ½ hours, 3 hours and 4 ½ hours after the drug administration. The difference between the mean temperature of the control group and that of the other groups were measured.

TABULATION OF RESULTS OBTAINED

SI. No	Name of the drugs / groups	Dose / 100 gm of body weight	Initial temperature in centigrade	After drug administration			Remarks	Change in the body temperature	Actual change due to treatment
				1 ½ hr Average	3 hr Average	4 ½ hr Average			
1	Control	2 ml	36 37	36 37	36 38	37 39	38	+1.5	-
2.	Paracetamol	20mg / 1ml	37 38	37 37	36.5 36.5	35 34	34.5	- 3	4.5
3.	Omathy Urundai	200mg / 1 ml	38 38	37.5 37.5	37 37	37 37	37 Moderate action	- 1	2.5

Inference: The trial medicine OMATHY URUNDAI has **Moderate A**ntipyretic action

Figure to show the Antipyretic action



ANTIDIARRHOEAL STUDY OF TRIAL MEDICINE

OMATHY URUNDAI

Aim

To study the antidiarrhoeal action of the trial medicine - Omathy Urundai by charcoal meal method in rats.

Preparation of drug

Omathy Urundai was ground into powder by mortar and pistle, then 1gm of the powdered drug was dissolved in 10ml of water.

Procedure

Four albino rats of uniform weight and size were selected and divided into two groups each having two rats. All the rats were fasted for 48 hours before starting the experiments. The first group was treated as control group and oral administration of distilled water (1ml) was made. The second group of rats was fed by the trial medicine, Omathy Urundai at a dose of 100 mg/100 gm of body weight.

After one hour, 0.5ml of 10% aqueous charcoal solution with gum acacia was given orally to all rats of each group by stomach tube.All the two test group animals were sacrified by chloroform after one hour of charcoal treatment and the distance travelled by charcoal was measured. The measurements were calculated by taking the distance travelled by charcoal from the pylorus upto the maximum distance it has passed in the intestine. The distance travelled by charcoal in experimental and control groups were tabulated.

Inference

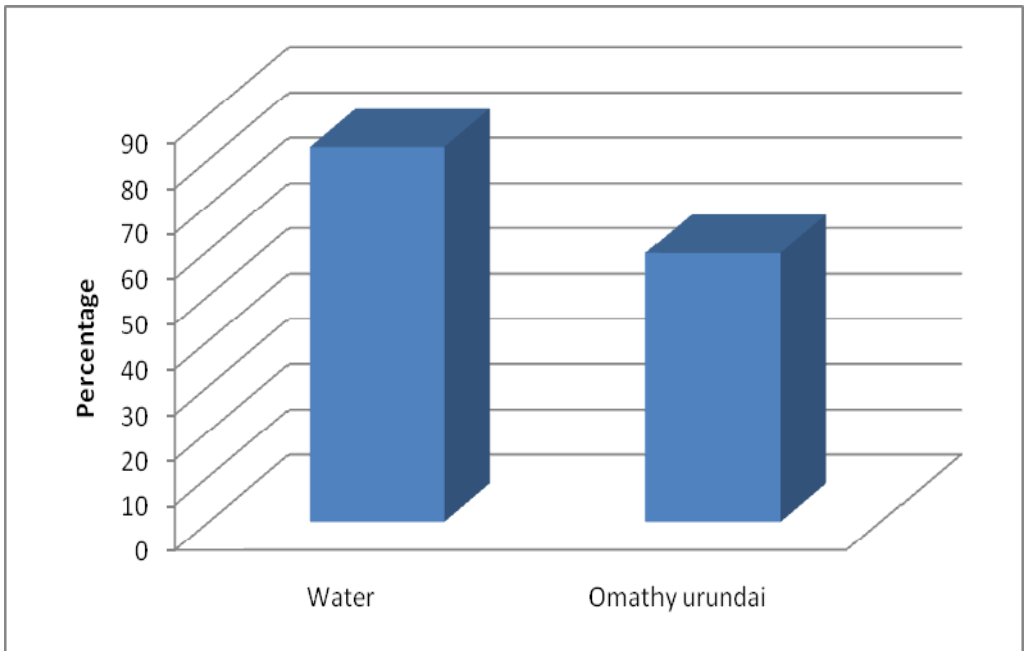
In the control group the percentage of distance travelled by charcoal was 82.7% and the total length of the intestine is 93cm, while in the second group animals treated with the trial medicine - OMATHY URUNDAI the percentage of the distance travelled by charcoal was 59.3% and the length of the intestine is 91cm.

ANTIDIARRHOEAL ACTIVITY OF THE TRIAL MEDICINE OMATHY URUNDAI IN RATS BY CHARCOAL MEAL METHOD

S. No	Group	Dose volume orally /100gm body wt.	Total length of the intestine (cm)	Carbon travelled distance (cm)	% of carbon travelled
1	Water +charcoal meal	1ml + 1ml	93	77	82.7%
2	Omathy Urundai +charcoal meal	200mg/1ml	91	54	59.3% Moderate action ($p< 0.02$)

From the above inference it is clear that the trial medicine OMATHY URUNDAI has **Moderate** Antidiarrhoeal activity.

Figure to show the Anti Diarrhoeal action



ANTIULCER ACTIVITY OF OMATHY URUNDAI

Aim

To study the anti ulcer activity of Omathy Urundai by Pyloric ligation method.

Instruments

Syringe, Needles, Scissors, Forceps, Cork board 10 ml Pipette, 500 ml Volumetric flask, Suturing thread, Medicine.

Preparation of the test medicine

1 gm of the test medicine was dissolved in 10ml of water. 1 ml contains 100 mgm.

Procedure

Six adult female albino rat weighing 100 gms each were taken. It was fasted for about 48 hours. Then the abdomen was opened under the ether anaesthesia and the pylorus of the stomach was ligated. At the time of ligation 2 rats were treated with 2 ml of the prepared test medicine solution directly into the stomach, another 2 rats were treated with distilled water at the same dose in the same manner. The incision was closed and the rats were allowed to recover. Then they were sacrificed 18 hours after the pylorus ligation the stomach contents were collected. The stomach was opened by cutting along the greater curvature and mounted on a moist cork board. The ulcers were examined and graded. The free acid and total acid level of gastric juice were also analysed by using 0.01N Sodium hydroxide with Topfer's reagent as indicator.

The results of the above experiments are shown in the table. Effects of OMATHY URUNDAI on gastric acid secretion are as follows.

Sl. No	Name of medicine /groups.	Dose / 100 gm body weight.	Degree of ulceration.	Volume of gastric secretion.	Free HCL in units.	Total HCL in units.	Remarks
1.	Control (water)	1 ml	100%	4 ml	15	40	
2.	Standard (Ranitidine)	20mg/1ml	10%	7.5ml	10	20	
3.	Medicine (Omathy Urundai)	200mg/1ml	15% ($p < 0.01$)	4 ml	23	65	Significant

Ulcer grades:

0 Grade – Normal.

I Grade – Scattered haemorrhagic spots.

II Grade – Deeper haemorrhagic spots.

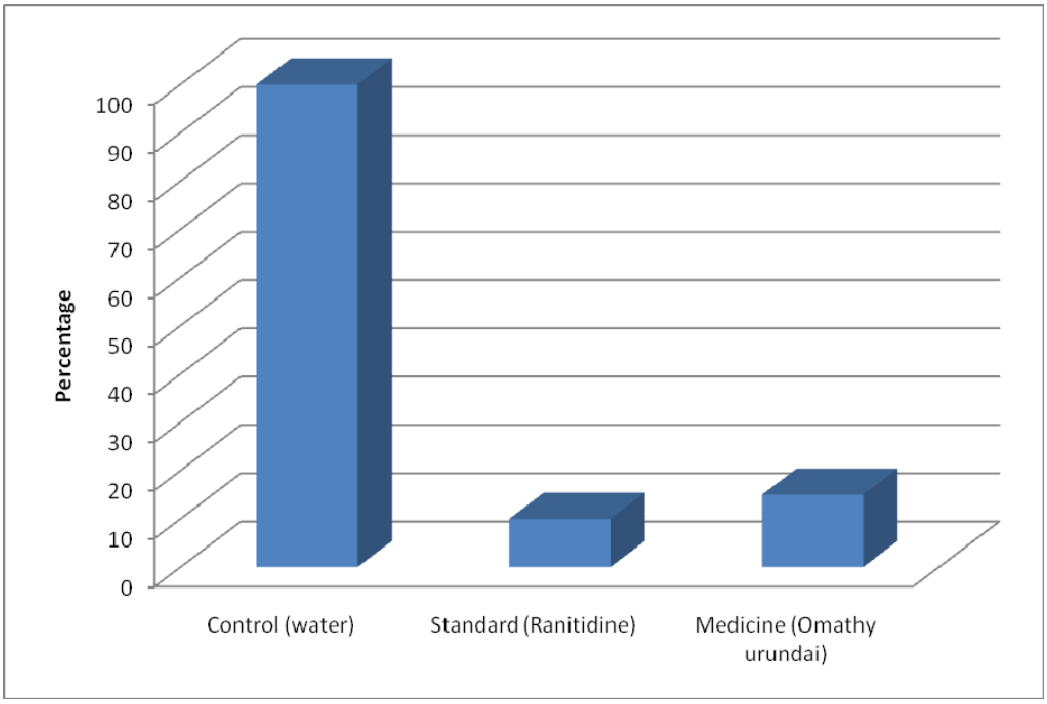
III Grade – Haemorrhagic spots and ulcers.

IV Grade – Restoration spots and ulcers.

Inference:

From the above results it is clear that the medicine Omathy urundai protects the gastric mucosa by neutralizing the excessive gastric acid.The trial medicine OMATHY URUNDAI has **Significant Antiulcer** activity.

Figure to show the Antiulcer action



CASE SHEET PROFORMA

GOVT.SIDDHA MEDICAL COLLEGE AND HOSPITAL, PALAYAMKOTTAI.

Branch –IV KUZHANTHAI MARUTHUVAM

POST GRADUATE DEPARTMENT.

AN OPEN TRIAL OF OMATHY URUNDAI FOR THE TREATMENT OF AKKARA MANTHAM

1. I.P no: ----------
2. S.no: ----------
3. Name: ---------- 4. Age (yr) ☐ 5.Gender: M ☐ F ☐
6. Informant: ----------
7. Father's occupation/ Income: ----------
8. Religion: ----------
9. Postal address

_____

10. Complaints and duration

_____

11. History of present illness

_____

12. Past history:

_____

13. Antenatal history:

_____

14. Birth and neonatal history:_____

15. Developmental history:_____

16. Nutritional history: _____

17. Immunization history: _____

18. Personal history: _____

19. Allergy and contact history:_____

20. Family history: _____

21. Social and environmental history: _____

CLINICAL EXAMINATION

GENERAL EXAMINATION

	Yes	**No**
1. Consciousness:	☐	☐
2. Nutritional status:	☐	☐
3. Anaemia	☐	☐
4. Jaundice	☐	☐
5. Clubbing	☐	☐
6. Cyanosis	☐	☐
7. Pedal edema	☐	☐
8. Lymph adenopathy	☐	☐
9. Koilonychia	☐	☐

Anthropometry

1. Body weight [kg] :

2. Height [cm] :

3. Head circumference :

4. Chest circumference :

5. Mid arm circumference :

6. Skin fold thickness :

7. Weight for age :

8. Height for age :

9. Weight for height :

Vital signs

1. Heart rate / min. :

2. Pulse rate / min :

3. Respiratory rate /min. :

4. Body temperature [^{o}F] :

5. Blood pressure :

SYSTEMIC EXAMINATION

		RS	**CVS**	**CNS**	**ABDOMEN**
1. Inspection	:				
2. Palpation	:				
3. Percussion	:				
4. Auscultation	:				

CLINICAL ASSESSMENT

		Yes	No
1. Pallor	:		
2. Dyspnoea on exertion	:		
3. Loss of appetite	:		
4. Bone deformity	:		
5. Emaciation	:		
6. Insomnia	:		
7. Ulceration of mouth & tongue	:		
8. Redness of tongue	:		
9. Fever	:		
10. Fever with chills	:		
11. Diarrhoea	:		
12. Nausea & vomiting	:		
13. Abdominal pain	:		

SIDDHA ASPECTS

NILAM

1. Kurinji ☐ 2. Mullai ☐ 3. Marutham ☐ 4. Neithal ☐ 5. Palai ☐

KAALAM

1. Kaarkaalam ☐ 2. Koothirkaalam ☐ 3. Munpanikaalam ☐
4. Pinpanikaalam ☐ 5. Elavenirkaalam ☐ 6. Muduvenirkaalam ☐

UDAL IYALBU

1. Vatham ☐ 2. Vatha pitham ☐ 3. Vatha kabam ☐
4. Pitham ☐ 5.Pitha vatham ☐ 6. Pitha kabam ☐
7. Kabam ☐ 8. Kaba vatham ☐ 9. Kaba pitham ☐

GUNAM

1. Sathuvam ☐ 2. Raasatham ☐ 3. Thamasam ☐

AYMPORIGAL

	Normal	Affected
1. Mei	☐	☐
2. Vaai	☐	☐
3. Kan	☐	☐
4. Mookku	☐	☐
5. Sevi	☐	☐

KANMENDHIRIUM / KANMAVIDAYAM

	Normal	Affected
1. Kai	☐	☐
2. Kaal	☐	☐
3. Vaai	☐	☐
4. Eruvaai	☐	☐
5. Karuvaai	☐	☐

UYIR THAATHUKKAL

VAATHAM

	Normal	Affected
1. Pranan	☐	☐
2. Abanan	☐	☐
3. Viyanan	☐	☐
4. Uthanan	☐	☐
5. Samanan	☐	☐
6. Nagan	☐	☐
7. Koorman	☐	☐
8. Kirukaran	☐	☐
9. Devathathan	☐	☐
10. Dhananjeyan	☐	☐

PITTHAM

	Normal	Affected
1. Analagam	☐	☐
2. Ranjagam	☐	☐
3. Sathagam	☐	☐
4. Alosagam	☐	☐
5. Prasagam	☐	☐

KABAM

	Normal	Affected
1. Avalambagam	☐	☐
2. Kilethagam	☐	☐
3. Pothagam	☐	☐
4. Tharpagam	☐	☐
5. Santhigam	☐	☐

UDAL THAATHUKKAL

	Normal	Affected
1. Saaram	☐	☐
2. Senneer	☐	☐
3. Oon	☐	☐
4. Kozhuppu	☐	☐
5. Enbu	☐	☐
6. Moolai	☐	☐
7. Sukkilam / Suronitham	☐	☐

ENVAGAI THERVUGAL

	Normal	Affected
1. Naa	☐	☐
2. Niram	☐	☐
3. Mozhi	☐	☐
4. Vizhi	☐	☐
5. Sparisam	☐	☐

6. Naadi

1. Vatham	☐	2. Vatha pitham	☐	3. Vatha kabam	☐
4. Pitham	☐	5. Pitha vatham	☐	6. Pitha kabam	☐
7. Kabam	☐	8. Kaba vatham	☐	9. Kaba pitham	☐

MALAM

	Normal	**Affected**
1.Niram	☐	☐
	Yes	**No**
2.Nurai	☐	☐
3. Kirumi	☐	☐
4. Kalappu	☐	☐
5. Erugal	☐	☐
6. Elagal	☐	☐

MOOTHIRAM

Neerkuri

	Normal	**Affected**
1. Niram	☐	☐
2. Manam	☐	☐
3. Edai	☐	☐
4. Nurai	☐	☐
5. Enjal	☐	☐

Neikuri 1.Vaatha Neer ☐ 2. Pitha Neer ☐ 3. Kaba Neer ☐

LAB INVESTIGATIONS

BLOOD

1. TC (cells/ cu.m.m) ☐☐☐☐☐

2**.** DC (%)**:**.N ☐☐ L ☐☐ M ☐☐ E ☐☐ B ☐☐

3. ESR (mm) ½ Hr ☐☐ 1 Hr: ☐☐

4. Hb (g %) ☐☐

5. Blood Urea

6. Serum Cholesterol

7. Serum Creatinine

8. PCV

URINE

1. Albumin - 0.Nil ☐ 1. + ☐ 2. ++ ☐ 3. +++ ☐

2. Sugar - 0.Nil ☐ 1. + ☐ 2. ++ ☐ 3. +++ ☐

DEPOSIT	**Present**	**Absent**
1. Pus cells	☐	☐ _____
2. Epithelial cells	☐	☐ _____
3. Red blood cells	☐	☐ _____

MOTION	**Present**	**Absent**
1. Ova	- ☐	☐ _____
2. Cyst	- ☐	☐ _____
3. Occult blood	- ☐	☐ _____
4. Pus cells	- ☐	☐ _____

CASE SUMMARY

TREATMENT

ADVISE

Date: _____ Signature of Doctor: _____

Station: _____ Signature of H.O.D:_____

DAILY PROGRESS

DATE	SYMPTOMS	WEIGHT	TREATMENT

GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL, PALAYAMKOTTAI.

P.G - IV. KUZHANTHAI MARUTHUVAM

DISSERTATION STUDY ON AKKARA MANTHAM

MEDICINE: OMATHY URUNDAI

Dose: 1tab, 3 times a day before meals

Adjuvant: Hot water

O.P. No Date	:	Socio Economic Status	:
Name	:	Address	:
Age / Sex	:	Informant	:
No. of days treated	:		

Symptoms / Signs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Pallor										
Dyspnoea on exertion										
Loss of appetite										
Bone deformity										
Emaciation										
Insomnia										
Ulceration of mouth & tongue										
Redness of tongue										
Fever										
Fever with chills										
Diarrhoea										
Nausea & vomiting										
Abdominal pain										
Other complaints										

Clinical Examination	**Before Treatment**	**After Treatment**
Temperature		
Pulse Rate		
Body Weight		
Height		
Mid arm circumference		
Naadi		

Investigation	**Before Treatment**	**After Treatment**
Blood : TC DC ESR HB		
Urine : Albumin Sugar Deposit		
Motion: Ova Cyst Occult Blood		

GOVT.SIDDHA MEDICAL COLLEGE AND HOSPITAL, PALAYAMKOTTAI.

Branch –IV KUZHANTHAI MARUTHUVAM

POST GRADUATE DEPARTMENT.

ADMISSION – DISCHARGE CASE SHEET FOR AKKARA MANTHAM

Name of the Medical Unit:

I.P. NO	:	Father's Occupation	:
Bed no	:	Father's Income	:
Ward	:	Nationality	:
Name	:	Religion	:
Age	:	Date of Admission	:
Sex	:	Date of discharge	:
Permanent address	:	Diagnosis	:
Temporary address	:	Results	:
Informant	:	Medical officer	:

S.No	CLINICAL FEATURES (Signs and Symptoms)	During Admission	During Discharge
1	Pallor		
2	Dyspnoea on exertion		
3	Loss of appetite		
4	Bone deformity		
5	Emaciation		
6	Insomnia		
7	Ulceration of mouth & tongue		
8	Redness of tongue		
9	Fever		
10	Fever with chills		
11	Diarrhoea		
12	Nausea & vomiting		
13	Abdominal pain		
14	Other complaints		

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